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ORIGINAL DEPARTMENT.
LECTURES.

Lectures on Orthopædic Surgery.

Delivered at the Brooklyn Medical and Surgical
Institute.

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3. *Talipes Valgus*, or *Flat-foot*.

The latter term has been given to this deformity on account of the breaking down of the plantar arch, and the more or less complete flattening of the plantar surface which comes in contact with the floor at almost every point. In the higher grades of paralytic valgus, the foot may be turned on its longitudinal axis so much as to convert the internal margin into the sole, Fig. 12.

FIG. 12.



Valgus is the most frequent deformity of the foot, from the fact that, irrespective of the other morbid causes, it is evidently the inheritance of the African race. It is indeed so common among

negroes as to constitute the normal type. Sometimes it is associated with knock-knee. Next to the negroes, valgus is very often met with among the Jews, more particularly in those countries where their race is preserved by the legal prohibition of intermarriage with Christians.

Besides this hereditary origin, we observe this deformity as a frequent result of diseases of the spinal cord, or, as it sometimes appears, from an exclusive paralysis of the tibial nerve.

A small, fractional part of the cases of valgus is to be attributed to inflammation of the ankle-joint. If not mistaken, we were the first who called attention to the fact that morbid reflexion was the proximate cause of that symptom.

Anatomically speaking, valgus exhibits diminution of the nighed arch of the foot. The otherwise receding tibial margin of the same, protrudes to a greater or less degree. In looking down upon flat-foot it seems to be inflected in two directions—first, from upward downward; second, from the external margin toward the internal. The anatomical relations are consequently reversed. The foot is rotated on its longitudinal axis to such an extent as to lower the internal margin and raise the external. In the higher degrees, and in long-established cases, the patient may step upon his tibial margin, and, more especially, upon the protruding scaphoid bone. If there be a great relaxation of the internal lateral ligament, as is usually the case, and the articulation be loose, the astragalus is somewhat turned and inwardly inclined so as to constitute a subluxation. The inflection of the foot seems to be placed between the first and second rows of the tarsal bones. The toes are everted and the external malleolus buries its contours in the external tarsal fossa. As a general thing, the extremity is attenuated and, when paralysis is the cause of the deformity, is arrested in development so as to differ in length with its fellow

To a certain extent, however, the difference must be ascribed to the altered form of the foot itself, which loses in its height from one-quarter to three-quarters of an inch.

We have already indicated the causes of the trouble, and assigned to maladies of the nervous system the greater share. It is indeed remarkable that apparently moderate affections of the brain and spinal cord during dentition should give rise to so serious consequences. In hundreds of cases we have had under our charge, at least 90 per cent. could be traced to the dentitional period, and in the larger proportion the premonitory symptoms were so insignificant as to be entirely disregarded by parents. Sometimes there was but a slight catarrh of the respiratory or alimentary organs; at others, it was preceded by great uneasiness. Many children have been put to bed in an apparently healthy condition, and taken up next morning paralyzed. In a few cases, inflammation of the meninges of the brain or spinal cord had given rise to the paralysis, which was then of a more extensive character, involving either one side of the body, (hemiplegia,) or the lower half, (paraplegia;) and in these cases talipes valgus is but one of the resulting deformities. In paraplegia, depending on direct pressure of the spinal cord by the posterior curvature of the spine, talipes valgus is rarely observed, whereas, we have met with equino valgus in fractures of the spinal column at its lumbar portion.

In all these paralytic or passive forms of valgus we find the tibial nerve, and consequently the adductor muscles of the foot, completely paralyzed, while the peroneal nerve has retained in part or *in toto* its innervation, or it causes a state of reflex contraction. In the former, the abductor muscles are only physiologically contracted, on account of the antagonistic muscular group being disabled; in the latter, reflex action has established a tonic and permanent contraction of the peroneus muscles. The difference between these two forms of active and passive valgus can be easily discerned by substituting the hand for the physiological action of the two tibial muscles. If the foot can be brought in this way into a correct position and held there by mechanical means, you have the passive form of valgus, and *vice versa*.

Talipes valgus, originating in inflammation of the tibio-tarsal and tarsal articulations, is always of an active character, depending invariably on

reflex contractions of the peroneus muscles. Not every inflammatory process in those joints necessarily gives rise to this deformity, but when they do, it is invariably valgus. From an extensive field of clinical observation, we have elicited no exception, and never met with a reflex contraction of the tibial or any other muscle of that region. In paralysis, we have incidentally observed reflex contractions of the flexores digitorum.

The lightest forms of talipes valgus are those of a consecutive mechanical character, as in genu-varum; but they are, nevertheless, very troublesome, painful to a high degree, and may even lead to inflammation of the tarsal bones.

The prognosis of valgus is governed by its producing causes. Generally the paralytic forms allow of only a doubtful prognosis. The more complete and extended the palsy, the less the hope of recovery. Progressive improvement of the principal disease, increases the chances in behalf of the valgus. We may amend the distortion and render locomotion more easy by mechanical appliances, but, of course, this does not constitute a cure. Because we cannot restore by these remedies the altered structure and lost tonicity, nor directly invigorate the arrested growth and development. In fact, beyond replacing and keeping the tarsal bones in their respective positions, and supporting the plantar arch, we can do nothing by orthopædic treatment. For these weighty reasons our prognosis should be cautiously given.

It is certainly true that paralytic affections in children, are not of so grave a nature as in adults and in people of more advanced age. Their powers of repair are greater: the skull and spinal column is yet soft or more pliable, and hence spontaneous improvements are frequent. Notwithstanding all this, a perfect recovery from paralytic valgus is one of the rarest occurrences. The more recent a case is, the more early a general and local treatment is resorted to, and the more limited the paralysis, the more favorable, certainly, is the prognosis.

Talipes valgus produced by an inflammation of the tarsal and ankle joints admits of a favorable prognosis, at least in as far as the deformity is concerned, and in general if the inflammatory process has not too deeply involved the interested structures. The division of the peronei muscles and the reposition of the foot act like a charm, and afford more relief than all antiphlogistics

that may be brought to bear upon the diseased structures.

Talipes valgus, dependant on knock-knee, allows an equally favorable prognosis, provided the case is not of too long standing, and the form of the bones not too materially altered.

4. *Talipes calcaneus*.

The term "calcaneus" has been assigned to that rare but very peculiar deformity of the foot in which the os calcis stands on the ground with its posterior extremity, and the foot is extremely bent, the dorsum approximating more or less the tibia, Fig. 13. In the course of our orthopaedic

FIG. 13.



practice we have seen but two indisputable cases of talipes calcaneus. One of them was in a boy about eight years old, whom we accidentally met with on one of the New York ferry boats. His deformity was fully as bad as that we have exhibited in the diagram, copied from Gross' work on surgery. Although he did not consent to have a cast taken of the malposition, which deprives us of the opportunity of showing you an exact copy in plaster, we, nevertheless, took ample time to examine his case thoroughly, and are thus enabled to give you an accurate description. This, together with the above diagram, will afford you a clear idea as to the mechanical character of talipes calcaneus, from which you cannot fail to recognize it.

The case under consideration represented the highest degree of flexion the human foot is capable of. The angle between leg and foot would not have exceeded 12° . The toes occupied almost

a vertical position, and the posterior part of the heel rested on the floor, and had become covered with thick callous substance. Although the extremity was decidedly shorter than its fellow, from the arrest of growth, yet the protrusion of the heel served as a substitute for the deficiency. The extensor muscles of the foot (gastrocnemius and soleus muscles) were completely paralyzed, their belly soft and undefined, the Achillis tendon flaccid, while the tibialis anticus and peroneus tertius were intensely contracted, so as to raise even the annular ligament. Any attempt to extend the foot met with insurmountable resistance on the part of the contracted muscles, whereby the toes bent back. The plantar arch was *not materially changed*, and, if at all, it was *diminished*.

Evidently the tibia was riding upon the anterior surface of the trochlea of the astragalus, and its superior surface seemed to be continuous with the posterior surface of the tibia. This anatomical relation accounts readily for the great downward protrusion of the heel. The affected extremity presented in every other respect the *usual symptoms* of talipes.

With reference to talipes calcaneus experience is limited. It is, therefore, doubtful whether the majority of cases be congenital or acquired. In our patient it seemed to be of congenital origin, and obviously caused by paralysis of the triceps and contraction of the two principal flexors of the foot. But, to tell you our honest opinion, if we had not known that there was such a thing as talipes calcaneus, we should have felt inclined to pronounce it posterior dislocation of the foot, so much had it that appearance.

At any rate, it cannot escape your notice that talipes calcaneus is the exact reverse malposition of talipes equinus.

Some authors, as for instance Little, have observed combinations between talipes calcaneus and varus and valgus, which are caused by the prevailing contraction of one of the flexors of the foot over the other. Such complications have received the name of calcaneo-varus and calcaneo-valgus.

The same author relates also a case of calcaneus, produced by an extensive scar in front of the ankle from a burn.

From all we have been able to gather about this subject, the prognosis seems to be rather favorable, provided the case be not of too long duration, and the bones themselves have become

malformed. Before leaving the pathology of talipes, we cannot refrain from looking upon a deformity which hitherto has been, and we think very erroneously, considered under the head of talipes calcaneus. From time to time, cases have been presented to our observation that consisted, evidently, in a contraction of the plantar muscles, and, consequently, in an increase of the plantar arch. Sometimes the toes are abnormally flexed or extended. The distorted foot is materially shortened, and, therefore, thicker than the other, the dorsum is proportionately more convex, the heel protrudes somewhat more downward, the ball of the foot is more developed, more especially when the toes are abnormally extended. Otherwise the motor apparatus is in perfect order, and no other muscular contractions manifest themselves.

This species of deformity has consequently nothing in common with talipes calcaneus, in either its pathology, causation, or treatment, and from its frequency deserves a place by itself.

We propose the term of *talipes simplex* or *plantaris* merely to discriminate it from the other forms of talipes.

As to its cause, we are inclined to ascribe it to the wearing of short boots. Among the Chinese women this is at any rate the prevailing cause, and that deformity is therefore very frequent among them. Whether an early inflammatory affection of the tarsal bones or their periosteum gives rise to talipes simplex, we do not venture to determine.

The prognosis of these deformities is governed by the same considerations we have already mentioned, and we need not repeat them on this occasion.

In fine, we desire to allude to a malposition of the great toe, which gives rise not only to a disfigurement of the foot, but constitutes the source of great inconvenience in locomotion. The toe is mainly outwardly inclined, and forms, with the head of the first metatarsal bone, an obtuse angle. From the metatarso-digital joint all parts recede, leaving a considerable protrusion which is soon covered with callosity, which, being exposed to pressure and friction, inflames and becomes tender. Occasionally abscesses form under the callosity, and thus seriously impede locomotion.

It seems that pressure from too narrow boots is the only cause; but in time, both flexor and extensor become shortened and require division, besides the mechanical appliances. The prognosis is invariably favorable.

Treatment of Talipes.

GENTLEMEN:—In our discussion on the prognosis of talipes, we have enumerated the chief points of difficulty in the way of its perfect relief. If you have attentively followed us, you must have become aware that the treatment of talipes is by no means as trifling as some surgeons make it appear. The steady advancement of surgical art has greatly facilitated our success; yet we meet with morbid conditions in the deformities of the feet, over which we can exercise but an indirect therapeutical influence. And for that reason, we should enter upon the treatment of those afflictions with correct views of their intricacy. Do not overestimate your ability, neither shrink from difficulties which perseverance and skillful management may overcome. Bear in mind that the division of contracted muscles is but *one of the remedies* we have to employ in the treatment of talipes, and which alone but rarely suffices. The operation of tenotomy most certainly is a great aid, but the after-treatment is equally important. In taking charge of a case of talipes, we should be unremitting in attention, and never leave to unskilled hands the mechanical adjustment of apparatus. In making rational use of all auxiliaries placed at our disposal, we serve both our patient and ourselves, and stand above blame in case of failure. For this appeal to your honor and duty, we have derived a good pretext from our experience. We have observed that poor sufferers, after having been skillfully operated on by eminent surgeons, were turned over to unskilled students for after-treatment. The cases naturally not only failed, but the failure greatly contributed to their aggravation and incurability. There is no reason why students should not enjoy the privilege of witnessing operations of this kind, and benefit by observing the mode of after-treatment. The latter requires, however, a well-trained hand, and we would rather assign the operation to a student than the after-treatment.

The general treatment of talipes resolves itself into the following indications:—

- 1st. The removal of muscular impediment.
- 2d. The reposition of the tarsal bones in their normal location.
- 3d. The re-establishment of the motor power.
- 4th. The promotion of nutrition, growth, and development of the affected extremity.

In young subjects, muscular contraction constitutes the *chief cause* of most cases of talipes;

their division is, therefore, *the chief and sufficient remedy* for the re-establishment of form and position of the foot. All that remains to be done besides tenotomy, is to keep the newly-acquired position by appropriate appliances.

If the bones of the tarsus are malformed, as is usually the case in patients of some age, who have employed their affected extremity in locomotion, the second indication presents itself as the next object of treatment. The means of replacing the tarsal bones are the hand and mechanical appliances. The former is of great service. Without causing any painful pressure or contusion, the great power of the hand can be concentrated at any place where it is needed, and the more assiduously it is employed the more rapidly the bones will yield. *There is no mechanical apparatus, however ingeniously constructed, that could be substituted for the hand in the mechanical treatment of talipes with an approximate degree of efficacy.* In fact, could we without interruption employ the hand as a mechanical agent, we would relieve most obstinate forms of talipes which too frequently withstand mechanical appliances. These latter we resort to as mere auxiliaries, and for the time that the hand cannot be used. Between the two, the mechanical treatment should be divided, and proper care should be taken that the apparatus is always so properly adjusted as to act effectively in the intended direction. In order to accomplish this, the patient should be constantly under the eye of the attending surgeon, or of a competent substitute, and the propriety of placing a patient in an orthopædic institution suggests itself most forcibly. For, to patients or nurses, such a duty cannot be assigned; they are neither competent, systematic, nor resolute enough.

To a certain extent, the remedies previously suggested comply also with the 3d and 4th indications. It is a common observation of orthopædic surgeons, that the relief of contracted muscles by tenotomy reacts most favorably upon the nutrition of the afflicted extremity, and nutritive supply promotes self-evidently its growth and development. Passive motion co-operates in the same direction. We may, however, do more to promote the motor power still extant, or maintain the fast deteriorating structure of the affected muscles. The most efficacious remedy in behalf of innervation is electricity. It should be used with assiduity every day, and for months in continuation; it will prevent structural decay and

stimulate the existing mobility; you can concentrate its action upon single muscles and muscular groups; and, by perseverance, establish muscular action where none existed. Electricity is the substitute of volition, and the best local gymnastic agent. Next are friction with alcoholic liquids; with phosphorated oil, (phosphorus, gr. iij, dissolved in an ounce of warm almond oil;) the use of the flesh-brush, with or without cold irrigation, and such internal remedies as the case may suggest. Proper care should be taken to aid the generation of animal heat in the affected extremity, by advising the use of worsted stockings or flannel bandages. Besides this, a proper hygienic regimen should be observed, to promote the constitutional health.

With all, gentlemen, you may fail in your efforts through the intricacy of the case. All surgeons have had such experience, even in instances that seemed to be promising. Hence, we should advise you never to engage a cure, but simply to guarantee your skill and attention. Your professional dignity and prudence should prevent you from making a promise which you might be unable to realize. For the same reason, do not uncharitably judge the failure of your colleagues, because they may have done their full duty and failed, where you might have been equally unsuccessful.

We propose now to invite your special attention to the subject of tenotomy and myotomy, and render you conversant with the history, technicalities, and indication of that operation. In doing so at this juncture we shall obviate repetition.

Tenotomy and Myotomy.

These comparatively modern operations have, with surprising rapidity, extended the field of their practical utility and have become most indispensable auxiliaries in orthopædic treatment. Like the ophthalmoscope in ophthalmology, subcutaneous tenotomy has revolutionized the orthopædic branch of surgery, and promoted its effectiveness. The operation is trifling when compared with the results. If properly performed, it is scarcely ever followed by inconvenient symptoms, and the small wound it leaves in the integuments usually closes within twelve hours, by first intention.

Although the tendons receive an inferior supply of vessels, which diffuse themselves in the external sheath and internal partition of connect-

ive tissue, nevertheless their repair of injuries is most rapid and perfect. The experiments of Paget* upon rabbits are conclusive on this point, and confirm the respective observations of Lebert,† von Ammon,‡ Duval,§ Duparé,|| and Brodhurst. A great difference is, however, noticeable in the reparative process of tendons, according to the mode of their division. In open wounds there is "more inflammation, and more copious infiltration of the parts than in subcutaneous division in the same rabbit." "Suppuration frequently occurs, either between the retracted ends of the divided tendon, or beneath its distal end." The skin is more apt to become adherent to the tendon, and to hinder and limit its sliding movements. The retracted ends of the tendons are more often displaced, so that their axes do not exactly correspond with each other, or with the reparative bond of union. The consequences of division may, however, be reversed by the skillful operation of the one, and a clumsy one of the other. Thus Paget¶ accomplished, in one of his experiments, first intention and speedy repair of a tendon of one leg, after an open division; whereas no repair had commenced on the twelfth day in the same rabbit in the other leg by subcutaneous section. That the delay of repair in subcutaneously divided tendons is not alone caused by the improper execution of the operation, we are satisfied from numerous clinical instances, and we believe that generally impaired nutrition is equally apt to favor separation of the divided tendon, and hinder the operative result.

The reparative process following subcutaneous tenotomy develops itself generally in such a manner that, at the instant of division, the fragments separate, "the upper portion being drawn up the leg, by the action of the gastrocnemius and soleus muscles," the lower remains opposite the wound. Very little blood is effused in subcutaneous operations, unless large vessels are divided. "Commonly only a few patches of extravasated blood appear in or near the space from which the part of the tendon is retracted." The first apparent consequence of the division of the tendon is the effusion of a fluid or semi-fluid substance, which, like the product of common inflammation, quickly organizes itself into the well-known forms of lymph or exudation cells,

speedily becoming nucleated and elongated. The exuded lymph makes the tissues at and near the wound succulent and yellow; the blood-vessels enlarge. Both the exudation and the enlarged blood-vessels distend the parts, so that the skin is scarcely depressed between the separated ends of the tendon. In rabbits forty-eight hours elapse before the reparative material becomes apparent. This is deposited in the connective tissue that lies between and close to the ends of the tendons, as well as in the partitions of the tendinous fasciculi of those ends. It thus swells up the space between the separated ends, and makes them larger, somewhat ruddy, soft, and succulent. This apparently fibrous blastema becomes nucleated, and gradually converted into filamentous structure, and at length may become perfect fibro-cellular or fibrous tissue.

As the bond of connection thus acquires toughness and definite character, so the tissue around it loses its infiltrated and vascular appearance, wherewith the integuments become looser, and slide more easily. In the specimens* presented by Tamplin to the Hunterian Museum of the Royal College of Surgeons, England, the new tissue had to all appearance become identical with that of the original tissue.

As to "the strength of the new tissue, and its connection with the original substance by intermingling," Paget furnishes some illustrations. He removed from a rabbit an Achillis tendon that had been six days previously divided and suspended from a section of the same (longitudinal?) gradually increased weight. It bore for awhile ten pounds, and suddenly gave way. In another experiment, the same author employed a tendon that had been severed ten days previously, and he gradually increased the weight to fifty-six, before it parted. We can bear evidence to the great strength of the intermediate tendinous substance, having observed but one case, and this in an individual some fifty years of age, in which it gave way in a position comprising both the entire weight of the body, (162 pounds,) and extreme flexion of the foot. Not unlikely, the intermediate substance had remained in a state of fibro-cellular texture.

In the foregoing details of reparation in divided tendons, we have largely drawn from Paget's Surgical Pathology, which gives a most lucid exposé of the entire process. The results of his

* Lectures on Surgical Pathology. London, 1853, page 176.

† Abhandlungen der Practischen Chirurgie, page 403.

‡ De Physiologie Tenotomiae.

§ Bulletin de l'Académie Royal de Médecine, 1837.

|| Nederlandsch. Lancet, 1837.

¶ Ibid., page 119.

observations having been derived from experiments with animals, whose muscles were in a state of structural integrity, represent only in a very general way the same process in man. In most instances in which surgery resorts to tenotomy as a curative agency, we have to deal with parts more or less deprived of normal innervation and nutrition. Hence the reparative process is more sluggish, and the transformation of the blastema into proper fibrous structure more or less protracted and imperfect. Yet, with all, the intermediate substance becomes, in the course of time, so strong and tenacious as to subserve the intended purpose. Then, again, the divided muscles and tendons have suffered more or less structural changes, which prevent them from retracting to the same extent as healthy muscles. This fact is worthy of note.

Another circumstance we have to mention as immediately connected with tenotomy, is the subsequent relaxing of the muscular belly a day or two after the section of its tendon, and the consequent approximation of its two fragments. Dieffenbach, we believe, was the first who called attention to this fact, and from that he inferred the antispastic effect of tenotomy. The explanation of the phenomenon is, that after section of the tendon the muscle contracts to the utmost of its capacity, and the excessive contraction subsequently relaxes by being tired out. We have observed analogous facts in the fracture of the patella, the olecranon, etc.

History of Tenotomy and Myotomy.

The first attempt at tenotomy is to be traced to Thilenius, who, in the year 1784, divided the Achillis tendon, after having made a free incision through the integuments. The patient, a girl of seventeen years, recovered, and the operation proved successful. The next operation of this kind was performed by Sartorius, on the 16th of May, 1806, upon the son of Martin Oust. The proceeding commenced with an incision four inches in length through the skin over the tendon; the cicatrices around the joint were carefully dissected off, the tendon transversely divided, and the foot broken straight by main force, whereby a crackling noise was heard. Michælis, on the 16th of November, 1809, in a case of club-foot, proceeded in a similar manner, with this difference, however, that he only *incised* the tendo-Achillis, rupturing the remaining portion.

The fourth operation of tenotomy was executed

by Delpech,* on the 9th of May, 1816. His case was talipes equinus, in an infant two years old. With that sagacity which characterizes the entire surgical career of this truly great surgeon, he recognized the practical advantages of a *smaller* opening through the integuments and *remote* from the tendon, and virtually performed thus the first *subcutaneous* division.

Delpech† prescribed the following axioms in the performance of tenotomy:—

1st. The tendon to be divided should not be exposed; its section should be made by entering the knife at a distance from the tendon, and not through an incision of the skin parallel to it. There is danger of exfoliation of the tendon, unless this precaution be taken.

2d. Immediately after division of the tendon, the divided extremities should be brought in contact, and so held by a suitable apparatus until reunion is accomplished.

3d. As reunion can only take place by an intermediate fibrous substance, gradual and careful extension should be made to give the required length to the shortened muscles before solidification takes place.

4th. Extension being complete, the limb should be fixed in this position, and there kept until the new substance has acquired that firmness of which it is susceptible.

Although the result in Delpech's case was quite satisfactory, the patient having acquired the proper form and position of the foot, and being enabled to use it in locomotion with firmness and rapidity, it seems that it was the only tenotomy that surgeon ever performed.

Of Dupuytren it was said, that he adopted the plan of Delpech in several cases; but when, and with what benefit to the patient, we have not been successful in finding out.

For about fifteen years the operation of tenotomy was not repeated, when Stromeyer not only resuscitated, but established it at the same time on a secure and permanent basis. His first tenotomy‡ was upon George Eblers, a young man of nineteen years, resident of the City of Hanover, and was performed on the 28th of February, 1831.

The discovery of Stromeyer, that tendons and muscles might be subcutaneously divided with impunity, opened at once a wide field for orthopaedic exploits. The prominent surgeons of Ger-

* *Chirurgie Clinique de Montpellier*, tome I., 1823.

† *De l'Orthomorphie*, tome II., 1828.

‡ *Rust's Magazin*. Band xxxix. p. 193. 1833.

many eagerly took hold of the new operation. The observations of Stromeyer were at once and everywhere put to a practical test. Very soon the medical periodicals abounded in praise of the new orthopædic measure, which was unanimously pronounced to be both harmless and efficacious. All cripples in the land were hunted up and invited to obtain relief by the new proceeding. Dieffenbach alone, if we mistake not, performed more than two hundred operations in the course of one year, and other surgeons large numbers in proportion to their popularity and public trust. From the various scientific centers in Germany, tenotomy radiated with unexampled rapidity to the remotest corners of the civilized world. Enthusiasm ran into a tenotomic fever, which took the character of an epidemic. Experience has established the true basis upon which the operation rests. It has decided the applicability of tenotomy and the non-applicability. It has put in a proper light both its merits and abuses. Since its advantages and demerits have been duly established, it has been recognized and incorporated in scientific surgery.

Technical Rules of Tenotomy.

For the object of the operation it is indifferent from which side a tendon is divided, whether from within or without, provided a small wound be made and proper care be taken to exclude air. Most surgeons prefer, however, to enter the knife behind the tendon and divide it toward the surface of the body. Some tendons are placed in such close proximity to nerves and vessels that the other way suggests itself as preferable, on account of the lesser danger of injury. Thus, for instance, in dividing the external hamstring we can more readily avoid the peroneal nerve, and consequently paralysis of the peronei muscles, by approaching the tendon externally.

The next technical rule is the appropriate position of the patient. The parts to be operated on should be well exposed to light, well accessible to the hand of the operator, and allow all the changes that may be demanded by the operation.

Further, the extremity requires to be immovably fixed by reliable assistants in a directly reverse position to the existing deformity. This precaution is indispensably necessary: *a.* To render the tendon (or muscle) more defined, recognizable, and accessible. *b.* To raise the tendon (or muscle) off from the adjacent parts.

To be continued.

COMMUNICATIONS.

The Insertion of the Capsular Ligament of the Hip-Joint, and its Relation to Intra-Capsular Fracture of the Neck of the Femur.

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Continued from page 387.

"No. VI. *Mr. Jones's Case.*—Jenkins Thomas slipped down as he was returning home one evening about the middle of October, 1838; he was seen on the following day, by Mr. Cole, House-Surgeon to the Infirmary, (Worcester,) who detected what he considered to be a fracture of the neck of the femur. He applied a splint to the outside of the limb, extending from the pelvis to the foot, and bound the legs together, making use of the left as an inner splint; a bandage was applied around the pelvis. In about eight weeks the splints and bandages were removed, and he was allowed to get up soon afterward. During the following spring and summer, he was able to move about with the assistance of a stick, but with the limb shortened about an inch and a half, and considerably everted. He came under my care as an inmate of St. Oswald's Hospital, January 13th, 1840, and died on the 20th of April following, of chronic disease of the lungs. At the time of the accident, he was more than eighty years of age, and he survived the injury one year and a half. On dissection, the capsular ligament was found very much thickened, and the space between the trochanter major and the edge of the acetabulum greatly contracted; the bone was macerated, and a vertical section made through the head, neck, and upper part of the shaft; the neck of the bone was found to have been broken within the capsule: the fracture extended through the basis of the head of the bone, in the line of its junction with the neck: it was firmly united by osseous matter. The bone was first macerated, it was subsequently immersed for several days in a strong solution of carbonate of potash, and one-half of it was boiled in water for three hours without the slightest yielding perceptible in the line of fracture. This specimen, which is preserved in the museum of St. Bartholomew's Hospital, was sent to Sir Astley Cooper, for examination. Sir Astley was of opinion that the fracture was 'in part within, and in part external to the capsular ligament; in part united, and in part not, and the neck of the thigh-bone absorbed.'"^{*}

On referring to the original history of the case, I find that Mr. Smith has omitted to quote some of its most important points. Mr. Jones states that—

"On dissection, the capsule was found very much thickened, and it was not until the shaft

^{*} Smith on Fractures, page 62.

of the bone was divided that the knife could be passed around the joint, so contracted was the space between the trochanter major and the edge of the acetabulum. The direction of the fracture could not be traced, or the bond of union made out, until the bone had been macerated. As portions of the capsule became loose, they were removed by the forceps, which enabled me to discover, what I believe to be the case, that the fracture occurred entirely within the capsule.**

Mr. Stanley saw the patient, and the following is from his history of the case:—

"The history of the case is clearly that of fracture of the neck of the femur; the appearances of the bone show that there has been a fracture which has reunited by an osseous medium, and the direction of the fracture is such as, in my opinion, can permit no doubt that it was confined to the portion of the neck covered by synovial membrane; consequently, that it was wholly within the capsule. The fracture extends through the basis of the head of the bone in the line of its junction with the neck. As in other cases of the same kind, a great part of the neck has disappeared, and, in consequence, the head is proportionately nearer to the trochanter major and shaft of the bone; *its reunion has*, in fact, taken place in part to the remaining portion of the neck and in part to the shaft.†

If it be true that "the fracture extended through the basis of the head," it is equally true that the head of the bone remained in its socket, unchanged, during the time required for the complete removal of the neck by absorption, and that, after this process was completed, the shaft was approximated to the head, and union occurred. It is by no means probable that the fracture occurred at this point; for we are bound, in obedience to the laws which govern the process of absorption, to expect that the fragment which is most imperfectly supplied with the elements of nutrition will suffer greatest loss by absorption. After fracture of the neck, the femoral fragment is abundantly supplied with blood by the nutrient artery of the femur and the vessels of the periosteum covering the neck, while the acetabular fragment is left with no other supply than that of the small vessels which enter the joint through the ligamentum teres; therefore we cannot conceive it possible that the loss by absorption was entirely at the expense of the fragment attached to the shaft of the bone. It is impossible to tell the point at which the neck was broken; yet it is highly probable that the fracture was nearer the shaft of the bone than the

middle of the neck, and that the loss by absorption was mainly at the expense of the fragment attached to the head of the bone. The engraving of the posterior surface of the specimen exhibits the neck removed by absorption, and the head of the bone closely approximated to the inter-trochanteric line, and to the apex of the trochanter minor, and consequently there can be no doubt that the line of union on this surface is external to the normal capsule. This engraving may be found in the twenty-fourth volume of the *Med.-Chirurg. Trans.*, but is not seen in "Smith on Fractures." Mr. Jones's opinion that the fracture was intra-capsular, was founded on the fact that the line of union was included by the capsule of the specimen, and since the insertion of this capsule was removed so far from its normal position that it was found to include the line of union, which was close to the shaft of the bone, the opinion of Mr. Jones furnishes no evidence that the fracture was within the normal capsule.

No. VII. *Mr. Chorley's Case.*—This case is cited by Mr. Smith in proof of bony union of intra-capsular fracture, while the description of the specimen affords positive evidence that the fracture was not entirely within the capsule; thus we find that "a portion of the upper fragment extended in one situation a little external to the capsule."* Malgaigne, under the head of "Intra-Capsular Fractures of the Cervix Femoris," says:—

"This name is given to fractures dividing the cervix within the limits of the synovial membrane, so that if this membrane were divided at the same level, the fracture would communicate at once with the joint.†

Mr. Smith concludes by saying that—

"The preceding cases furnish ample evidence of the possibility of the occurrence of osseous union in cases of intra-capsular fracture of the neck of the femur, and it is highly probable that they have all been examples of impacted fractures: certainly in all those, of which delineations have been given, there has been either penetration of one fragment by a portion of the other, or else the irregularity of the line of fracture has been such that the displacement of the fragments has been prevented; they have been maintained in contact and at rest, and it is under such circumstances alone that we are to hope for the occurrence of bony consolidation.‡

Mr. Smith's conclusion that union in all those cases "of which delineations have been given,"

* *Medico-Chirurg. Trans.*, vol. xxiv.

† *Ibid.*

* Smith on Fractures, p. 63.

† Malgaigne on Fractures, p. 530.

‡ Smith on Fractures, p. 64.

is due to the fact that the fragments have, in each case, been impacted in such a manner that displacement has been prevented, is beautiful in theory; but unfortunately it does not harmonize with his record of the changes consequent upon the injury. He states that—

"The superior fragment of the broken cervix usually disappears to the level of the brim of the acetabulum, either in consequence of the action of the absorbent vessels, or by the friction of the broken surfaces, or perhaps it is due to a combination of both these causes. The absorption, however, sometimes extends much further; I have seen half of the globular head of the bone thus removed, and a case has been recorded in which the head of the bone was completely absorbed. In old cases the femoral fragment is likewise absorbed to a greater or less extent; sometimes it disappears entirely to its base. * * * The absorption of the lower fragment is sometimes effected with extraordinary rapidity; in Case No. IX. the shortening of the limb which immediately followed the receipt of the injury was only a quarter of an inch, but after the expiration of six weeks it amounted to one inch and a half; and in Case No. XII. the removal of the greater part of the neck of the bone was accomplished in less than a month."*

If Mr. Smith regards the cases in question as exceptions to the general rule, that absorption follows the fracture, then we ask how he accounts for the complete removal of the neck in Cases V. and VI.?

The history of No. V. (Mr. Adams's case) states that—

"Scarcely any portion of the neck can be said to have been left. The head and shaft seem to be mutually impacted into each other, and almost the whole of the cervix has been absorbed."

The history of No. VI. (Mr. Jones's case) states that—

"This specimen was sent to Sir Astley Cooper for examination. Sir Astley was of opinion that the fracture was 'in part within, and in part external to the capsular ligament; in part united, and in part not, and the neck of the thigh-bone absorbed.'"

If absorption did follow the fracture in each of these cases, to the complete removal of the neck, the impaction of the fragments, which Mr. Smith considers so indispensable to bony union of this fracture must have been loosened, so that in accordance with his own theory he could not have "hoped for bony consolidation." Certainly the force of the blow which produced the fracture was not sufficient to crush and ob-

literate the neck. The sections of these specimens show that the neck has neither been driven into the shaft nor the head of the bone; yet the neck is gone, and the head is united to the shaft. (See plates on pages 61 and 63 of Mr. Smith's work.) *I do not see how these specimens can be regarded as examples of impacted fracture; neither do I see how it can be known that the fracture, in either case, was within the normal capsule; but if the fracture in each case were intra-capsular, these specimens furnish strong encouragement for us to hope for bony union, under favorable circumstances, if the fragments be approximated, even after the entire removal of the neck by absorption.*

The following seven cases were reported in the April number of the *American Journal of Medical Sciences* for the year 1857, by Reuben D. Mussey, Professor of Surgery in the Miami Medical College of Cincinnati, Ohio.

"Case I.—Mr. S., aged 78 years, a hardy yeoman from one of the hilly districts of New England, when more than a hundred miles from home, upset his two-horse wagon, fell on his left hip, and could not get up. He was carried into a house and was visited by Dr. J. C. Dalton, a highly distinguished professional gentleman, who pronounced the case to be one of fracture of the neck of the thigh-bone, and proceeded to apply a modification of Desault's long splint. In four or five days the patient became so restive under his confinement among strangers, that he employed a carpenter to prepare him a box which should receive a bed together with himself and splint, with a view to return home.

"When the doctor heard of this he remonstrated with no small degree of emphasis against the project, but without avail; the old man said he might as well die in one way as another, and home he would go. When the box was ready he was wagoned home, and was carried forty miles on the last day of his journey.

"Eighteen days after the injury I visited him. He made a somewhat singular appearance lying in his box, which, to accommodate himself and splint, he being over six feet high, was not much less than ten feet in length. On removing the bedclothes, I perceived that his knee and foot were turned considerably outward. I took off the splint, and gave some passive motion to the hip, without his complaining of pain; I then flexed the thigh to a right angle with the body, and kept it a minute or two in that position. This, too, was done without giving pain; on flexing the thigh to an angle a little acute, he complained that it hurt him in his groin. Pressure with the fingers upon the groin and behind the trochanter major, both in the flexed and extended position of the limb, gave him decided uneasiness. I compared the length of the limbs as well as I then

* Smith on Fractures, p. 42.

could, without being able to satisfy myself that there was shortening of the injured limb. I then asked the old gentleman if he wished to get up. He said that he did, but could not. He was assisted to get into a chair, and sat for some time. From that day onward he wore no splint, and was got up from his bed daily. I gave it as my opinion that the neck was not fractured, inasmuch as it had strength enough to support the weight of the whole limb for a minute or two, but did not satisfy myself as to the exact nature of the injury. Soon after this I received a letter from Dr. D., who expressed surprise at the opinion which he understood I had given, saying that on his first visit to the patient he found the limb everted and shortened more than an inch, and also detected crepitus. I wrote him in reply that I founded my opinion on the fact that there was strength enough in the neck to support the limb without causing pain or doing manifest injury. In the course of four months the patient could walk with a cane, but remained lame, and could never ride on horseback, as he had formerly been accustomed to do. Between two and three years after this, he died of an acute attack of visceral disease. The bone, on being carefully cleaned, presented the following appearances, viz.: the neck shortened, and on its front a groove or depression running in a zigzag direction close to the head. The shaft rotated outward, so as to bring the corona of the head within one-third of an inch of the posterior inter-trochanteric ridge; while the distance of the corona of the head from the anterior inter-trochanteric line is one inch and three-eighths, and the head sunk below the level of the top of the trochanter major, making a shortening of more than half an inch. A vertical section of this, made by a saw, shows a consolidation of the fracture by a deposit of a mass as compact and white as ivory.*

The history of this case is interesting, as an illustration of the extreme difficulty which often attends the accurate diagnosis of injuries about the hip-joint. No one questions the ability of either of these distinguished surgeons, yet while Dr. Dalton was positive that the neck of the thigh-bone had been fractured, Professor Mussey was equally confident that the fracture had never occurred; and it was only the appearance of the dried specimen after the death of the patient that convinced him of the truth of Dr. Dalton's opinion. This is the specimen which gave rise to such a diversity of opinion among European surgeons when exhibited to them by Professor Mussey in the year 1830.

Assuming that the bone was fractured, a supposition which is not clearly proven to be based upon truth, either by the history of the case or by the appearances of the specimen, we have

only to ask, was the fracture and its subsequent union entirely within the normal capsule?

The description of this specimen corresponds with the engraving accompanying it, and shows—

"The neck shortened, and on its front a groove or depression running in a zigzag direction close to the head. The shaft rotated outward, so as to bring the corona of the head within one-third of an inch of the posterior inter-trochanteric ridge; while the distance of the corona of the head from the anterior inter-trochanteric line is one inch and three-eighths."

The shortening of the neck of this specimen has been mainly at the expense of its posterior surface, the anterior surface remaining nearly as long as it was before the injury. In this respect it closely resembles the specimen owned by Professor Parker, and nearly all other specimens, the necks of which are in any degree shortened.

The outward rotation of the limb, and the consequent friction of the posterior surfaces of the fragments with each slight movement of the patient, is without doubt the exciting cause of this local absorption of the neck, and is probably due, in most instances, to an effort on the part of the patient to relieve pain by relaxing the muscles of the hip which have been injured by the blow producing the fracture. The force of gravitation would also, especially during his sleeping hours, rotate the limb outward, the weight of the limb being on a line external to its point of support at the hip.

The line of union, on the posterior surface of the neck, as shown by the engraving of a section of this specimen, approaches as near to the shaft of the bone as the base of the trochanter minor, a point which, in some instances, will be found three-fourths of an inch or more external to the normal capsule; and I have yet to see a single specimen of the normal capsule which would include this line of union.*

To be Continued.

A Brigade Surgeon!—One of the Brigade Surgeons recently appointed is said to be a person who has for some time been an advertising venereal doctor in this city, and who has until recently occupied an office which is still covered with his glaring signs at a conspicuous street corner. We believe that the same individual presented himself before the Examining Board of the State of Pennsylvania, and was rejected on account of his connection with the business alluded to.

* American Journal of the Medical Sciences for April, 1857.

* See American Journal of the Medical Sciences for April, 1867, p. 300, Fig. 2.

Palatine Defects and their Treatment.

By JAMES E. GARRETSON, M.D.,
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DISEASES OF THE MOUTH—Continued.

Obturator.—The instrument or plate called an obturator gets its name from the Latin verb "*ob-turare*," and signifies a something that shall close or stop up an entrance or break. Thus, after the operation of trephining, it is not uncommon to shield the exposed brain against risk of accident by fitting a silver plate over the site of the removed bone; and this shield is, to all intent and purpose, an obturator—it closes the break in the continuity.

In the treatment of palatine defects obturators may be employed with the greatest success; the range of their application is really wonderful. I have seen one case, at least, where the whole side of a face has been so completely restored through such instrumentality, that a passing observer would scarcely, I think, have remarked anything amiss with the wearer.

In the consideration of the more strictly surgical treatment of palatine defects, we studied the operations which suggested themselves as being the most effective and promising. It is not, however, as we will find, every patient who is willing to submit to an operation, and it is not, on the other hand, as we are prepared to understand, every case that is fit to be operated upon. To leave either class of persons to their ill fate would be as cruel as it would be unnecessary; it is here, therefore, we may so happily resort to the means known as the surgico-mechanical.

As obturators are to fulfill variable indications, so, of course, do they vary in form, style, and method of manufacture. The most simple obturator is one made to cover a break, more or less extensive, in the hard palate proper; that is, a break that does not implicate either the alveolar borders or the soft palate. Such an obturator holds the same relative position to obturators in general that the Physic-Dessault apparatus holds to all apparatus for thigh fractures. Both may be termed principals, and any or all variations are but modifications of these principals. Thus, if I explain the style, indications met, and mode of manufacture of a simple obturator, I exhibit fully the genius of the instrument, and enable the surgeon so to appreciate the mechanism of the piece that he will be prepared to diminish or enlarge its capacity *pro re nata*.

A patient presents himself to us suffering under a deficiency in the hard palate. We examine the case, and find the walls of the break so heavily and solidly indurated that we perceive at once any attempt to pare and bring the parts together would be futile. Palato-plasty at once and naturally suggests itself, but observation of surrounding parts convinces us that the risks are too great for the good promised. Such is a case that not unfrequently offers itself to the surgeon's judgment. Dieffenbach, whose name is so honorably associated with oral surgery, evidently found himself much bothered with just these cases, cases which I would here present as the easiest of remedy, by use of the obturator. It was Dieffenbach, it will be remembered, who suggested the stud of India-rubber. Two pieces of rubber the thickness of pasteboard were cut three or four times larger than the opening to be closed, and between these was placed a small round piece, the whole was then securely fastened together by means of waxed thread; one of these pieces was intended to rest on the posterior, and the other on the anterior surface of the opening; the small middle piece was for the intermediate space.

A single moment's reflection will exhibit the inconveniences as well as the more striking faults of such an appliance. The rubber, unless it was vulcanized, (and which, to be so applied, it could not be,) would soon become very offensive. It would act as a continual source of irritation, and particularly as far as the posterior base of the cleft is concerned. The center piece, which, to hold the parts with any degree of steadiness, would have to fit the opening with some degree of accuracy, would, because of the presence of moisture and heat, soon expand, thus enlarging the canal. It would be very inconvenient to remove for the purpose of cleansing, which cleansing it would certainly demand daily.

A case amply illustrative of the inefficiency, and as well, indeed, of the absolute harm resulting from this mode of treating palatine defects, is recorded by Dr. J. H. McQuillen, of this city, in the *Dental Cosmos*. The patient, who had an opening in the palate, the result of syphilis, was treated by Dr. Neall, who employed, in the first instance, India-rubber as a substance from which to construct an obturator. This was cut somewhat in a button shape, being large above and below and contracted in the center, thus constituting an apparatus which was retained in position by resting on the floor of the nares, surround-

ing the orifice. After it had been worn a week or two, the patient returned, when it was found quite loose, and the orifice somewhat enlarged, the rubber having acted as a source of irritation, and induced absorption. Another apparatus was formed from the same material, and, after being worn a week or so, the orifice was found much larger than at the previous meeting. The rubber was also found considerably affected by the fluids of the mouth. Satisfied that it would not answer the purpose intended, this material was abandoned, and a simple obturator of silver was constructed, covering the orifice and roof of the mouth. This was found to answer every indication.

There is another, a somewhat domestic treatment for these defects, which I may here allude to. This consists in stuffing the break with cotton or wool. Besides being a filthy, this latter is a quite dangerous practice. The cotton not unfrequently escapes into the throat, or, passing into the nares, it has sometimes produced ozena, by lodging among the turbinated bones; quite extensive necrosis of these bones has been in this way provoked.

A case of a different class, yet belonging to the same category, as treatment is concerned, invites, in connection with the consideration of simple obturators, a moment's attention. This is the existence of a cleft or break associated with subacute or chronic disease—the cases to which we allude as not being fit for operation.

Some time since Mr. —, a French teacher of this city, had necrosis of the palatine arch, the result of venereal disease; the sequestrum that came away was quite large, producing a break in the continuity of the hard palate quite an inch in diameter, of course freely exposing the nares. The result was, as might be anticipated, his vocation as a teacher had at once to be relinquished.

I saw this case, in consultation with the attending surgeon, about a month after the patient had resigned a situation which he held in one of our principal private schools, and upon which, up to this time, he had mainly depended for his income. The necessities of the man were, of course, immediate, and any operation for the restoration of his speech was out of the question. I had the happiness of relieving the man of his trouble so perfectly in three days, by the use of an obturator, that every time he has since met me he has laughingly assured me that he speaks much

better English than before his accident. It is certainly true that he speaks quite as well.

The obturator for these cases consists simply in making a metal plate that shall fit accurately every part of the hard palate, the regularity of the arch to be restored by carrying the plate over the cleft or break. Such a plate should fit with the greatest nicety, and is to be held in place either by bands placed around certain of the teeth, or otherwise by means of atmospheric pressure. The first plan of fastening the piece should be employed when disease is associated with the cleft. The latter is well adapted when the break is not too large, and where all disease has long passed away. To make such an obturator—and which can be best done with the assistance of the dentist—we first take an ordinary impression cup, such as is employed in taking casts of the mouth, an article that can be obtained at any dental depot for from fifteen to twenty cents. This cup is filled with ordinary beeswax, softened before the fire to the consistency of dough. Thus prepared, the operator takes his position behind the patient, as recommended in the operation of staphyloraphy. The cup is now to be introduced carefully into the mouth, and carried just so far back as will allow of the teeth being included within the arch or rim of the cup. This accomplished, cup and wax, in a body, are to be pressed firmly up into the roof of the mouth and around the neck of the teeth and alveolar border. The patient holding the mouth very wide open, the mass is to be removed even more carefully than it was inserted. This manipulation, if properly executed, gives us the exact impression of the mouth. The next step is to make a model. To do this, we take the impression we have just obtained, and surrounding it with a rim of paper, the rim to be say one and a half inches in height, we stir into water the common calcined plaster—sulphate of lime—until we have a very thick, creamy paste. This paste is poured into the impression, and should be enough to fill from the wax, which lies at the bottom, up to the top of the rim. The model thus made is not to be disturbed for three or four hours; it must have time to set.

The next step in the operation is to remove, from about the plaster cast we have just made, the paper and wax. This is accomplished, first, by heating gently the cup in which the wax lies, which permits of its easy removal; and next carefully trimming from about the necks of the

teeth, by means of a knife-blade, kept constantly warm, the wax which so closely surrounds and imbeds them; in this way the wax may all be safely taken away. This paper is, of course, simply to be torn away, and this is done before removing either cup or wax. Comparing the face of the model then made with the mouth from which the impression was taken, we shall find we have its counterpart to the minutest particular.

As the model contains the break in the arch, and it is our intention to restore this arch to its original and natural contour, so is it at this step in the procedure that we can best secure our object. This, I think, is easiest done by taking a little ball of warm wax, and filling with it the hole or break in the model. The natural concavity of the arch is in this way restored. Of course this is not at all difficult, nor is there any guess-work about it, as we have the inclinations of all the surrounding parts to guide us, and all we have to do is simply to model this wax to the proper curve.

The cast is finished by beveling the portion which rested against the paper; this beveling to be so done that the greatest diameter of the model shall be its base.

This completes the model to which the obturator is to be made.

The next step is the preparation of dies. These are to be made, one of zinc, the other of lead; and the process of getting up such casts is precisely the same as that adopted by the dentist or the moulder.

Take a circle of tin—a common tin cup, with the bottom broken out, answers the purpose admirably—lay the model you have prepared upon the table, the palate face looking up. Now place the circle of tin over it, and with some moulder's sand, very fine, which you have previously moistened and tempered, cover in the model, packing and filling the circle completely. Now turn the circle or cup so that the base of the cast looks up. Next a penknife-blade or small gimlet is to be inserted into the plaster, and by striking it several light taps the cast will be found to be loosened. It is now to be lifted by means of the knife-blade from the sand. Thus we have a mould for a metal casting. The next step is the making of such a cast. To do this we have only to take one or two pounds of the common zinc, and melting it in any convenient vessel, pour it slowly into the mould. This done, let the whole remain undisturbed until completely cold.

Thus, it is seen, we have prepared, with little or no labor, a correct model of the mouth in metal. It is to this zinc model we are to fit and adapt our obturator. Now this latter process is easy or difficult, according as one goes about it. One method is to take hammer, files, and pliers, and cut, file, and mallet, until the adaptation is secured. Such a task is almost as hard as was supposed to be the cleaning of the Augean stables; besides, it is next to an impossibility to properly accomplish it. A second plan, and which is as easy, simple, and interesting, as the other is difficult, perplexing, and annoying, consists in making a counter model in lead, between which and the model, or male cast, the plate or obturator is to be struck up. This counter model is very easily made, as follows:—

Take the zinc cast and lay it upon the table, with the face or palatine surface looking up; lay over it the cup or circle, precisely as in the case of the plaster model. Now, with the sand moistened as before, fill up the cup covering in the cast—packing the sand as solid as possible. Next, without disturbing the cup as it rests upon the table, take a knife, and dig away the sand until you expose the face of the cast. You are now prepared to make the counter model. Take a vessel, not the one in which you melted the zinc, and place in it two or more pounds of lead; when melted pour this over the face of the zinc cast, filling up to the very top the hole which you have dug out in the sand. When the lead has become cool, take the castings from the sand, and, with a hammer, the two can be easily knocked apart.

To make the obturator, by means of these dies, we next proceed, as follows: A piece of thin sheet lead is forced with the fingers over the face of the zinc cast; with a sharp and delicate-bladed knife this lead is cut so as to cover accurately the hard palate, being even festooned so as to adapt itself accurately about the necks of all the teeth. This palate of lead being thus nicely and correctly fitted to the parts, it is taken off, and the casts carefully spread out. Next it is laid on a piece of gold or silver plate, (such as is easily procured from any jeweler or at any dental depot,) and the outlines distinctly marked out with cutting forceps; the shape of the arch, as marked from the lead, is then cut out from this second piece of metal. The next step is the process of annealing, or softening the metal, so that it shall be as malleable as possible. This consists in

subjecting it to a red heat, and which may be done in any convenient manner. The dentist lays the piece on charcoal, and throws over it, by means of a blow-pipe, the flame from his alcohol soldering lamp. This does it very nicely.

It is next to be taken up, and with the pliers bent so as to fit the cast tolerably; it is not, however, at all necessary, in this procedure, to give one's self unnecessary trouble. Next take up the counter model, and lay it carefully over the zinc—the plate being between the two. With the hammer the casts are now to be driven together. In this step of the operation it is rather desirable that we should feel our way, that is, hit the models a few slight taps, and then taking them apart, see if the plate is going as you want it. If all is right, then the casts may be driven into each other with all reasonable force. If, on the contrary, the plate is not taking a proper direction, it must be so inclined by means of the pliers. To complete the finish of the plate itself, it may, perhaps, require that the festoons, which are to embrace the necks of the teeth, be cleanly cut out by means of the ordinary round file.

Thus we have our obturator completed. If we place it in the mouth we will see that we have restored the arch, by our contrivance, to its original condition, at least so far as purposes of speech and mastication are concerned.

Nothing now remains but to secure the piece firmly to its place. And this brings us to the consideration of modifications of the instrument.

Now, if a patient, for whom we had made such an obturator as that the manufacture of which I have just described, had certain good sound teeth, we might proceed to fix the piece in the mouth as follows: Going back to the plaster model, we would fit around such teeth as might seem to us best, delicate bands of metal—gold should always be preferred; these bands should fit the teeth with great accuracy, and should be fixed to their places while the obturator is lying on the model. Take next a particle of wax, and stick the plate and bands together. Now carefully lift all from the model, and set in plaster. This last manipulation is accomplished by laying the piece on charcoal, and pouring over all, the wax alone excepted, the creamy plaster, before alluded to. When this plaster sets, the wax is taken away, and there is exposed a small portion, both of obturator and bands. These parts are to be soldered together.

This last process fits the piece for the mouth.

In placing it in position, we have only to slip the bands over the teeth, and we will find that it is held with all security.

Another plan of securing the apparatus to the mouth is by means of atmospheric pressure. To accomplish this, a cavity is to be made in the piece. This is done by placing on the plaster model, before making the castings from it, a piece of wax; its shape may represent, in diameter and thickness, the ordinary half dime. Or, perhaps, we cannot find a surface on the arch for a suction of such size and shape; if so, it may be lessened, or the shape may be modified so as to suit any case. What we want is a cavity in the plate; the size and location is not of so much consequence. Such a piece of wax will, of course, be represented by zinc in the casting, and by a depression in the counter cast. In forcing the plate between the dies the portion represented by the wax is thrown up, thus when the plate is in the mouth a cavity is formed. The obturator is held, in this case, by making an air-pump, as it were, of the tongue, and sucking the air from the cavity. I have seen obturators, thus dependent on atmospheric pressure for fixedness, held so tightly that it required quite an amount of force for their removal. This is the principle which the dentist employs for holding artificial teeth in place. And the whole *modus operandi* will be perfectly understood at a glance, by looking at any half set of teeth made for the superior jaw.

To be continued.

General Symptoms and Physical Signs of certain Chest Diseases which sometimes attend Pulmonary Tuberculosis.

By A. P. Dutcher, M.D.,

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PART FIRST.

Pulmonary tuberculosis very seldom runs its entire course without being complicated with some other lesion of the chest, such as bronchitis, pneumonia, pleurisy, and emphysema. When any of these affections occur during the progress of phthisis, they produce physical signs quite different from those which characterize the original malady. We propose, in this number, to notice very briefly some of these signs.

Let us take as our first example a case of pulmonary tuberculosis complicated with *bronchitis*. Mary A., aged fifteen; has been ill for six weeks

her pulse 93, and respiration 28; cough and mucous expectoration; appetite not good, and digestion very imperfectly performed; bowels quite loose; fever every afternoon and evening; pain in the head and back; urine scanty and very high colored. Thompson's gingival margin very clearly defined on the gums. Microscopic examination of the sputum show an abundance of withered pus-corpuscles, and shriveled nuclei, with the common products of mucous expectoration. Mother died several years ago with phthisis.

On inspecting the chest, no difference could be detected in the expansion of the two sides. Percussion yielded no dullness on either side. The only sound elicited on auscultation was *sonorous rhonchus*. This sound was loud and clear over the region of all the larger bronchi.

Although the general symptoms pointed out the existence of phthisis, yet, from the absence of all the more prominent physical signs of any permanent injury from tubercular deposits in the lungs, we regarded the present difficulty as mostly bronchial, and gave a favorable prognosis.

After attending her for three weeks, there was a material improvement in all the symptoms, and I fondly hoped that my patient would soon regain her usual health. But in this I was disappointed. She appeared to improve a little for about two months, when she suddenly became much worse. She complained of great weakness; her pulse and respiration became more rapid; and, in short, all the symptoms of hectic were very prominent. Sonorous rhonchus was very loud, and masked all the other auscultatory signs. There was little or no dullness on either side; and on inspection, no inequality could be detected in the expansion movements of the two sides. Her decline was very gradual, and she fell a victim to the disease in six months from my first visit.

Post mortem showed limited tubercular deposits in the superior lobes of both lungs, in various stages of softening, with a few small cavities. The middle and inferior lobes of the right lung were very much congested. The bronchial mucous membrane was thickened, and in several places studded with quite a number of small ulcers, proving very conclusively that it had borne the chief shock of the disease.

In all cases of phthisis complicated with bronchitis, sonorous rhonchus is generally very loud, so much so that it will sometimes mask every other sound. But sonorous rhonchus is usually intermit-

ting. Thus, the act of coughing and expectorating all the matter contained in the bronchial tubes will temporarily suspend it, and if we embrace this period, we will sometimes hear other sounds which may be present. I have a patient now under my care, who has a large suppurating cavity in the superior lobe of the left lung, who has suffered very much with bronchitis from the very commencement of the tubercular affection. When the bronchia is free from expectoration, cavernous respiration is very audible, but as it becomes engorged with matter, the cavernous respiration will gradually give place to sonorous rhonchus. I have not the least doubt if a careless auscultator should examine this case, he would in all probability pronounce it a bad case of chronic bronchitis. It illustrates very clearly the value of a minute knowledge of auscultation, and a careful application of its principles, when employed in diagnosing the various complicated maladies of the chest.

But sometimes sonorous rhonchus is indicative of tubercular disease. How are we to distinguish in this case? When the sound is heard at the summit of the lung, we may generally conclude that it is tubercular in its origin; when heard at the base, it is usually bronchial. I am acquainted with but one exception to this rule; and that is in those cases of chronic bronchitis complicated with dilation of the bronchi, where distinct pouches are formed. In this instance, the diagnosis from the physical signs is extremely difficult. Where these pouches are very large, they may be very readily taken for tubercular cavities, if we rely exclusively upon the physical signs. A microscopical examination of the sputum will greatly aid us in solving this problem, and give us a direct clue to the nature of the malady. I have on several occasions met with cases of chronic bronchitis attended with bronchial pouches that have been regarded by other physicians as tubercular. If the microscope had been used to examine the expectoration, they would not have fallen into this error in their diagnosis.

PART SECOND.

Pneumonia is a very frequent attendant on pulmonary tuberculosis. It may occur at all stages of the disease, and is a very serious complication. Some authors have considered pneumonia as the primary cause of tubercles in the lungs. We cannot subscribe to this opinion. Tubercles are unquestionably heterogeneous in

their nature, and, to express our idea in common language, have no more business in the lungs than so many gravel stones. That they should excite irritation, inflammation, and its attendant consequences, is not to be wondered at. The wonder is, that they frequently remain in the lungs so long and produce so little trouble. Pathological observation teaches us that nature is sometimes very accommodating in this particular: she very frequently disposes of these intruders without suffering them to destroy the pulmonary tissues to any considerable extent. We allude to the arrest of tubercular disease by cretaceous formations. These are often found in the lungs of individuals who have died with other diseases.

But when tubercles soften and cavities form, they are evacuated by ulceration, which is one of the results of inflammation. As a general thing, the inflammatory process is confined to the immediate vicinity of the tubercles; but frequently it will extend its influence far beyond this, involving the whole lobe of the lung in which they are deposited, and even an adjoining lobe. Hence in addition to the usual physical signs of phthisis, we will have some of those which belong to pneumonia, particularly *crepitant rhonchus*. At the beginning of the inflammation, this morbid sound will only be heard at the commencement of inspiration and at the end of expiration; but as the affection advances, and the inflammatory process becomes more complete, it accompanies the whole respiratory act, when it masks all the other sounds, and without a previous history of the case, it might very easily be set down as one of simple pneumonia. Sometimes the crepitation will extend far beyond the point of the tubercular deposit and compass one lobe, or all the lobes of the affected side, and render the diagnosis by the physical signs very uncertain.

How often is it the case that, after attending an individual through an attack of pneumonia, perhaps very mild in its character, and we have prognosticated a happy termination of the disorder, we are suddenly aroused to the sad fact that the chief exciting cause of the inflammation has been tubercular deposits in the lungs, and nothing remains for our patient but a series of similar attacks, which will sooner or later terminate his existence! Very frequently have I met with instances of this kind. Here is a brief description of one of them.

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In the spring of 1860 pneumonia was unusually prevalent in this vicinity. I had a large number of cases, and among them was a young woman, aged eighteen. She had generally enjoyed good health up to the evening of her illness. The disorder was ushered in by a severe chill about four o'clock in the afternoon, which was followed by fever, flushed face, headache, pain in the back and limbs. When I was called to see her, at nine o'clock the same evening, she complained of a deep-seated feeling of heat and weight in the chest, but no pain or stitch in either side. Her pulse was 120 per minute, and respiration 40; dyspnoea somewhat urgent, compelling her to lie on her back, with her shoulders very much elevated. Cough very frequent, and expectoration scanty, consisting of glairy mucus streaked with blood. The bowels were costive, and the urine scanty and very high colored.

The physical signs were very marked. On inspection, the respiratory movements of the two sides of the chest were unequal, the right being partially suspended. On percussion, there was dullness from the base to the summit of the right lung, but apparently more marked at the base. On auscultation, very feeble crepitation was heard over the whole side. The physical signs on the left side were nearly normal, with the exception of some mucous rhonchus.

Her case was regarded as one of simple pneumonia, and she was treated with counter-irritants to the chest, and one of the following powders every three hours:—

R.—Hyd. chlor. mit., gr. xij;
Pulv. jalapæ,
Potassæ nit., ʒʒ gr. xx. M.
Divide in powders No. 4.

On visiting her the next morning I found her somewhat better. The pulse and respiration not so frequent. No pain in the head or limbs; skin moist and warm; bowels freely moved; urine more abundant; cough not so troublesome, and expectoration more free. Discontinued the powders, and ordered the following, in teaspoonful doses, every six hours:—

R.—Morph. sulph.
Ant. et pot. tart., ʒʒ gr. ij;
Aq. font., fʒij. M.

The above, with blistering of the chest, was continued for seven days, when the pneumonia appeared to give way, and she was treated with iodide of potassium, quinia, and occasional doses of Dover's powder when the cough was trouble-

some. On the twenty-first day from the commencement of the attack, I dismissed the patient as convalescent.

In about four weeks from my last visit, I was requested to call and see this patient again. She had improved but very little. The pulse in the lying posture was 105 per minute, and standing was increased only three beats per minute. This circumstance alone led us to institute a more careful examination of the chest. Dullness on percussion, and prolonged expiratory murmur on auscultation, directly under the right clavicle, pointed the existence of a large tubercular deposit in that region of the lung. Dullness and crepitation had entirely disappeared from the middle and inferior lobe. The only abnormal sound on the left side was sonorous rhonchus, which was not very loud, and quite intermitting in its character.

Having informed her friends of the true nature of her malady, and the probability of its proving fatal, they asked permission to invite Dr. S., a neighboring physician, to meet me in consultation. He came, examined the case, did not agree with me in opinion, considered her case as still one of simple pneumonia, and recommended a rigid antiphlogistic course of treatment, with the most positive assurance that the patient would ultimately recover; from all which I dissented. I, therefore, relinquished the case to his care, with the full assurance that his treatment was to restore the patient to her wonted health.

But Dr. S. was not an auscultator; he knew nothing about the precise nature of the pulmonary lesion, and he was doomed to be disappointed in his prognosis. After attending her for two months without any material improvement, one day, in the absence of the doctor, she was suddenly attacked with hæmoptysis. Her friends becoming alarmed, I was sent for. I found her very weak; the discharge of blood had been very profuse. I prescribed what I thought to be necessary, and promised to call again the next day, which I did, early in the morning. The hemorrhage had ceased; her cough was troublesome; the expectoration abundant and purulent. The physical signs indicated a considerable cavity in the superior lobe of the right lung, with crude tubercular deposits in the left.

From this time she declined very rapidly, and died in about two months from the occurrence of the hæmoptysis.

Comment on this case is hardly necessary. It

furnishes us with another illustration of the value of the art of auscultation in diagnosing the various diseases of the chest. The general symptoms may point out the chest as the part affected, and may give us some clue as to the nature of the malady, but as to the precise location and extent of the lesion, the physical signs are beyond all value, and he who discards them is as unwise as that man who would attempt to navigate the ocean without chart or compass.

PART THIRD.

Pleurisy is another very grave complication of pulmonary tuberculosis. Few patients escape it altogether. Some writers have considered it as one of the principal causes of phthisis. A double pleurisy is regarded by many physicians as a sure precursor of tubercles in the lungs. This to a certain extent is true. In an individual predisposed to phthisis, it may precipitate the attack by debilitating the system and preventing the free expansion of the lungs, but without such proclivity, I doubt very much its influence as an inducing cause of this disorder. Persons sometimes have pleurisy, and a short time after will have pulmonary tuberculosis. Now, in this instance, it is often a question whether the tubercular deposits produced the pleurisy, or the pleurisy the deposits.

The question is one which at present cannot be positively determined. Whenever I meet with cases of this kind, I am in the habit of referring them to a tubercular origin, and treat them accordingly. Intercurrent pleurisy frequently takes place during the progress of phthisis, and is a source of great distress. If it were not for this and the cough, in the great majority of cases phthisis would be quite a painless disease.

I have known several instances where an attack of pleurisy was the first thing to announce the approach of the fell disorder. But, as a general thing, it does not make its appearance until the tubercular disease has made some progress, when, all at once, the patient will be attacked with a sharp, cutting pain in the chest, most commonly in the side, which will resist every act of inspiration, making the act of coughing and deep breathing almost impossible. If we now inspect the chest, we will find the expansive movements of the affected side almost suspended, its dullness more marked on percussion, and if any sound is heard in auscultation, it will be crepitant.

If the disorder is not promptly arrested, and effusion to any considerable amount take place within the pleural membrane, the affected side becomes fuller to the eye, and there is a total absence of resonance on percussion, and no respiratory murmurs are heard on auscultation, the function of the lung appears to be entirely suspended. Such extensive effusion, however, seldom occurs as the consequence of pleurisy in phthisis. The inflamed pleura throws out a little lymph only, there being no serous effusion, and the only traces of pleurisy we find on post mortem is the adhesion which exists in the opposite surfaces of the pleura. Some writers maintain that these pleuritis never result in health when they occur in tubercular lungs. But we cannot see that there is any difference in their healing in this case than in the primitive form of the disease. The mode of healing is by adhesions, as just noticed. And we have frequently seen these adhesions perfectly healthy in lungs that have been well-nigh disorganized by tubercular disease.

From the general history of pleurisy, as it occurs during the progress of phthisis, we are warned not to look upon it lightly. It is a serious complication, and has been known to terminate the case very abruptly, before the tubercular disease has made very much progress in the lungs. Five years since, I had a woman under my care, about 30 years of age, who had a small suppurating cavity in the superior lobe of the left lung. Her symptoms were all favorable, and we looked for a gradual healing of the cavity. She had three children and was able to attend to all of her household duties excepting washing. One day, owing to the sickness of the individual who usually performed this for her, she attempted it herself, but gave out before she was half through. That night she was attacked with acute pleuro-pneumonia, which terminated her life in seven days.

On post mortem the right lung was found to be slightly congested, but otherwise healthy. The superior lobe of the left lung was quite contracted, and exhibited, when laid open, a small, tubercular cavity undergoing the process of repair by the agglutination of its sides by dense cellular substance of new formation. The inferior lobe was completely hepatized, and the pleural membrane contained about sixteen ounces of bright, straw-colored serum. The bronchial mucous membrane was slightly congested, but other-

wise healthy. The most careful examination did not reveal a single tubercle in either lung.

I had this patient under my care for more than a year. Her case was considered hopeless when I commenced to attend her. She was confined to bed, was very much emaciated, and had confirmed hectic. By the persevering use of cod-liver oil, iodide of potassium, quinia, iron, porter, and a very nutritious diet, she was able in three months to attend to her household duties, and was gradually improving in health up to the time of the attack of pleuro-pneumonia. If this had not supervened, we would in all probability have had another case of recovery from pulmonary tuberculosis to add to the list which has already been reported, as the result of the present mode of treating this malady.

PART FOURTH.

Emphysema is sometimes associated with pulmonary tuberculosis. It may either precede or succeed it, and render the diagnosis from the physical signs difficult. When the lungs are emphysematous, they are generally dilated and rarified; in tuberculosis, they are contracted and condensed. Hence, in emphysema we have increased resonance on percussion, and on auscultation feeble respiratory murmurs; while in tuberculosis there is dullness on percussion, and very little, if any, diminution of the respiratory murmurs, particularly in the first stage of the disease.

I have met with some cases of this sort, where, from the physical signs, it was impossible to make out a clear diagnosis. Thus, when tubercles are deposited in a part of a lung that is emphysematous, its tendency is to diminish its capacity for air and render its resonance less clear, while they do not materially alter the character of the murmurs. We can, therefore, see how a considerable deposit of tubercle may take place in an emphysematous lung without producing any particular deviation in the normal sound of the chest.

These remarks apply to the first stage of tubercular deposits, and when they are quite limited in extent. When they have passed into the stage of softening, the physical signs will be more marked, and the diagnosis much easier made out. The chief physical sign of the stage of softening is *humid crackling*. This is usually heard at the summit of the lung, without existing elsewhere. If there has been any obscurity about the case,

this will dispel it. Humid crackling at once pronounces the disease tubercular. It does not under any circumstance belong to emphysema. At least so say some of our best auscultators.

Two years since, I met with a case of emphysema that had been pronounced tubercular by three physicians; one of them had given his written opinion to that effect. The patient was a young woman aged 24; she was of the nervous-sanguineous temperament. When I first saw her she had not been well for four months. Complained of weakness, dyspnoea, a troublesome cough, with copious mucous expectoration; pulse 85, and very susceptible to change of posture; respiration 30; digestion good; rests well at night; menses regular, but scanty; no appearance of Thompson's gingival margin; has lost in weight during the past month; never has had any hæmoptysis, or pain in the chest; has no hereditary title to phthisis.

The physical signs were not marked. On inspection, the expansion of the two sides of the chest was nearly equal; the right side appeared more arched than the left. On percussion, it yielded a clear resonance, with the exception of just under the left clavicle, where there was a slight degree of dullness. On auscultation, the respiratory murmurs were very feeble on the right side, and sonorous rhonchus was very loud over the entire bronchi on this side. On the left the auscultatory sounds were nearly normal.

From the physical signs there appeared to be but one circumstance which seemed to indicate tuberculosis, and that was the slight dullness on percussion just under the left clavicle. But this was more apparent than real. It existed by comparison only. The emphysema was confined exclusively to the right lung; hence its resonance was much clearer on percussion than natural, while that of the left was nearly normal.

The case was set down as one of limited emphysema of the right lung from chronic bronchitis. The treatment instituted was blistering the chest. Iodide of potassium, five grains three times a day two hours after eating, and a teaspoonful of the following mixture when the dyspnoea was troublesome:—

R.—Tinct. ext. Cannabis Indica,
Syrup. Tolu., aa f3ij;
Sulph. morphie, gr. ij. M.

This treatment was closely followed up for four weeks with marked improvement in all the chest symptoms. During this time the blister was re-

applied five times, and with very sensible benefit each time. The bronchitis having been subdued by the above treatment, and the emphysema being somewhat troublesome, she was placed upon the use of the following, in tablespoonful doses three times a day:—

R.—Hyd. chlorid. corrosiv. gr. j;
Syrup sarsaparillæ comp., f3xvi. M.

By the use of this prescription the emphysema gradually gave way; and up to the present time she has enjoyed her usual health. In cases of emphysema that are curable at all, I have found nothing more useful than minute doses of mercury. I prefer the bichloride to all the other preparations of this mineral. It should be given very cautiously and in very minute doses; and I have generally found that where the emphysema depends upon the remains of inflammatory products that may be left in either the air-cells or smaller bronchi, this agent will gradually and surely produce their absorption, and restore them to their wonted functions. Those cases of emphysema depending upon organic changes in the air-cells and the capillary circulation of the lungs are not only incurable, but incapable of being materially influenced by medical treatment. In this case mercury would do no good, but might be the means of producing much injury, particularly if tubercles were associated with it.

PART FIFTH.

Pneumothorax.—This is not a common complication of pulmonary tuberculosis. In all the cases of this disorder that I have attended, I have only met with it four times. In this disease, it always occurs as the result of a tubercular abscess opening into the pleural cavity. When you open the chest of an individual who has died from this complication, you will commonly find the pleural sac filled with air, serum, and, if the abscess in the lung was large, blood clots and tubercular pus. The lung will be found shrunken and adherent to the chest, and the perforation at some point where the adhesions are not very strong. The opening is usually very small, and sometimes difficult to find. If, however, when found, we introduce a probe into it, it will pass directly to the cavity in the lung; in this cavity we will find the termination of one or more bronchi; thus forming a free communication for the admission of air into the pleural sac.

Sometimes there is more than one perforation, and they seldom if ever occur at the very sum-

mit of the lung, for the adhesions which exist there are so thick and strong that they prevent this; but lower down, opposite the angle of the third and fourth ribs, these perforations are usually found. They are seldom found below this, for tubercular cavities in the inferior lobes of the lungs is a very rare occurrence. The quantity of liquid effusion in the chest is commonly not very great, especially if the perforation has proved rapidly fatal; but this is not always the case; patients have been known to live several months after this accident. One of my patients lived five months, but his sufferings were beyond description; I hope it may never be my lot to witness the like again. In some of these cases of perforation, the tubercular deposits are very limited and the cavities very small, and the accident is found to be as frequent as in those cases where they are more extensive, and the cavities much larger. Cavities situated very near the surface of the lungs are more liable to perforate the pleura than those which are more deeply seated.

At what particular period, during the progress of phthisis, pneumothorax is the most liable to occur, cannot be positively stated; we have no statistics to guide us in the formation of an opinion. We know, however, as a general thing, that it does not usually take place until the pulmonary lesion has made considerable progress. Thus an individual may have all the symptoms and physical signs of the disease for several months, and it may be progressing in the usual way, when all at once the patient is attacked with a sharp pleuritic pain in the side, accompanied with great dyspnoea, and a marked increase in all the febrile symptoms. In other cases the attack may rather resemble a severe shock to the system than an inflammatory invasion. There is no pleuritic pain, but great oppression of the respiration, inability to lie down, and a tendency to syncope, a rapid feeble pulse, with cold, clammy perspiration, pinched countenance, and all the other symptoms of approaching dissolution.

The physical signs of this complication of phthisis are commonly very marked. The side affected is found unusually resonant on percussion; the respiratory murmurs are indistinct and sometimes entirely absent on auscultation. In some very rare cases, the chest is found very much dilated on inspection. These physical

signs, occurring under the circumstances described, are quite indicative of the accident in question. But when the patient survives the first shock of the perforation, he will soon have certain other physical signs, which belong to what some writers have been pleased to call HYDRO-PNEUMOTHORAX, such as *metallic tinkling* and *amphoric respiration*.

Metallic tinkling, when very distinct, is a never-failing sign of effusion in the pleural cavity; in this instance it is produced by the bursting of bubbles of air on the surface of the fluid contained in the cavity, when it is but partially filled with air. This sound presents several modifications, which are quite indicative of the condition of the parts, and the progressing changes which are likely to occur in them. Thus when the perforation is small or obstructed by its position against the walls of the chest or below the level of the liquid, the tinkling is seldom heard excepting on coughing or taking a full breath, which reaches the cavity and may throw the liquid in bubbles. When the orifice is large and free, the air will pass in and out in ordinary breathing, and will produce in its vicinity a sound like that of blowing into the mouth of a glass bottle; this is the amphoric respiration just named; where we hear this sound, there is seldom so much difficulty in breathing as where the air passes less freely and accumulates in the cavity.

But we have not the space here to give a full description of these sounds. For a minute history of them, and their value as means of diagnosis, we must refer the reader to Skoda on Auscultation and Percussion, or Dr. Austin Flint's excellent work on Physical Exploration and Diagnosis of Diseases affecting the Respiratory Organs. This latter book we would recommend to every physician who may desire to become proficient in the art of percussion and auscultation. This work should have a place in the library of every individual engaged in the general practice of medicine. It is based, to a very considerable extent, upon cases numerically examined, and carries the evidence of careful study and discrimination upon every page. It is a work in our judgment which reflects great credit upon its already distinguished author. It is also a very readable book, which cannot be said of every one that has been published on percussion and auscultation.

Hints and Observations on Military Hygiene, relating to Diet, Dress, Exercise, Exposure, and the best Means of Preventing and Curing Medical and Surgical Diseases in the Army.

BY A HOSPITAL SURGEON

Of Philadelphia.

Concluded from page 198.

All wounds and injuries of the meatus auditorius produced by sharp penetrating instruments, puncturing or lacerating the walls of the passage, should be treated by subduing inflammation and allowing the parts to recover with the least possible degree of irritation. If there is much hemorrhage, injections of ice water or solutions of styptics, as the persulphate of iron, etc. should be employed, and great care should be taken to discover the cause, especially if the patient is likely to die from it, as death may be produced by concussion or fracture through the base of the brain, or falls upon the side of the head. If from a polypus or fungoid granulations in the meatus, it is soon checked by an astringent wash of oak bark, tannic acid or alum, or one of the salts of iron. Larrey states that if such injuries are accompanied with loss of substance, the attention of the surgeon should be directed to the prevention of the agglutination of the parietes, and the obliteration of the meatus; an instance of such an accident occurred to a soldier, who, during the siege of Paris, had been wounded by a ball in the right ear.

Larrey makes some suggestions, not altogether useless to the military surgeon, on the accidental perforation of the membrana tympani and its results. The rupture of this membrane, although it may be complete and occasioned by a powerful rush of air, or by the shock of some mechanical cause, as the sharp report of a piece of artillery, is not invariably followed by incurable deafness. Larrey has seen several individuals in whom this perforation had actually occurred, and who, nevertheless, after having been deprived for a longer or shorter space of time of their auditory faculties, recovered them entirely and almost as perfectly as they were before the occurrence of the accident.

If, however, inflammation is set up and a discharge takes place, these openings are difficult to close, and this is especially the case if irritating applications have been resorted to in the early stage. The proper treatment for recent injuries is to let them alone; inflammation should be combated with local depletion; mild astringent washes can be employed after the acute symptoms have disappeared.

Larrey states that he could relate several cases corroborating the truth of his assertions, but he will restrict himself to the following fact:—M. Mazelle, one of the captains of the 18th demi-brigade, being the first at the head of a company of grenadiers who scaled the tower of Saint

Jean d'Acre, in Syria, where a breach had been made to force a passage into that place, had been thrown down in consequence of the explosion of some Greek fire and other combustible materials, and was pitched into the moat of the tower. Besides other serious injuries which he sustained from so tremendous a fall from a height of upwards of thirty feet, he had both tympana broken, and was in an instant totally deprived of hearing. In this condition he remained for about ten or twelve years; nevertheless, after that period the function of hearing gradually became restored, and he finally recovered that faculty to such a degree that he could resume and perform all the military duties of his particular grade with the same precision as before the accident.

Gunshot and Penetrating Wounds of the Thorax and Pleural Cavity.—Believing that much injury and even death have followed the usual method of treating wounds of the chest, and approving the practice and precepts of a distinguished American Surgeon* in a recent contribution to this journal with cases, I feel I cannot do better for the young military surgeon than to quote his words.

"There cannot be any doubt that the time-honored rule of practice in penetrating wounds of the thorax, viz., the *timely and careful closure of the wound* after the bleeding vessels have been secured, for fear that collapse of the lungs would follow the entrance of air into the pleural sac, is *totally wrong*, and ought to be discarded. It is *not true* that atmospheric air—a medium which is constantly surrounding us and without which our existence would cease—when entering the pleural cavity will *necessarily* produce collapse of the lungs and phlogosis, with its results. Why should its contact with the pleura be more injurious after accidents than with the other serous tunics lining the great cavities and their organs? We puncture the abdominal cavity with impunity; enlarge abdominal openings with protrusion of the intestines, without apprehension of danger; we puncture even the pleura in hydrothorax and empyema, and do not fear a bad result; and yet we are taught to believe that air, entering the chest from wounds inflicted in a healthy state of the system by accidents, and not made for surgical purposes, is extremely hazardous."

Denying the deleterious effects of the contact of air with the pleura, it is yet very doubtful if air, in such a quantity as to cause compression of the lung, can enter an incised wound, considering that the several tissues—skin, cellular tissue, aponeurosis, muscles, and pleura—when traversed by the instrument, are of different degrees of elasticity and density, that the fibers of the two sets of intercostal muscles run in opposite directions, and that the internal and external openings are seldom found exactly opposite to each other. Moreover, after the infliction of

* A. G. Walter, M.D., Pittsburg, Pennsylvania. Med. and Surg. Reporter, June, 1861, p. 216.

penetrating wounds, the patient generally becomes feeble and faint, the respiratory efforts, checked too, by pain, grow consequently weaker, the thorax expanding less and the intercostal spaces collapsing. Under these circumstances atmospheric air cannot enter by a small and oblique opening; but if large and capable of admitting a free current of air, with consequent oppression to the lung, the instinctive efforts of nature to relieve the lung of the compressing agent would be called into action by deep inspirations, and the air thus entering would be expelled again through the wound.

Therefore it is *not* the entrance of air in penetrating wounds of the thorax which constitutes the danger, but hemorrhage, with its effects and consequent inflammation of the thoracic viscera with its results. Though bleeding from a wounded *arteria intercostalis* may have, either spontaneously or by pressure and ligature, been arrested, yet it cannot be safe to close the wound immediately after, as already effused blood in the pleural cavity has to be removed.

Admitting that small quantities, when extravasated, will be absorbed, it cannot be denied that a large quantity, when filling the sac, and forcing the lung upon itself, will remain unabsorbed, and thus act as a foreign body, inducing empyema, with grave constitutional irritation. The correctness of the above conclusions being fully borne out by the result of cases, we are constrained to adopt, as the *only proper and safe practice* in the management of wounds of the thorax suspected to be penetrating, the following rules:—

"The first duty of the surgeon must be to ascertain, by gentle probing, if the wound be penetrating or not. This surely cannot augment the injury, being, moreover, demanded for the purpose of detecting in the track of the wound the presence of a foreign body—a broken knife, sword, bayonet, or bullet, etc. Thus the depth of the wound, and its direction being ascertained, the surgeon is put on his guard to expect internal bleeding. If this be present, the wound should be *left open*, the bleeding arrested by local and general means, and the outward flow of blood encouraged by inclining the body toward the wounded side. The propriety of even enlarging the wound, if it be small, and inward bleeding excessive, cannot be questioned. But if the effusion be moderate, and the wound small, it may be left to itself; if large, however, and the effusion great, part of the aperture should be left open, the rest closed by suture or plaster. The hazardous effects of secondary hemorrhage will thus be prevented by a free opening for the exit of the effused blood. Supporting the chest next by a bandage, in which an opening has been left opposite the wound, and by general and local antiphlogistic means, the patient will then escape the danger which otherwise must follow an injury of such a grave nature."

Wounds of the Heart.—Slight wounds of the

heart are curable when inflammation has not been great, as distinct scars have been observed on the pericardium, and on the surface of this organ. Cases have also occurred in which wounds of the heart have healed, in which, some time after the injury, death has taken place, and the bullet has been found in the heart.

We can only determine that the heart is wounded from the direction and depth of the wound.

The symptoms are: a more or less severe pain in the region of the heart; extraordinary restlessness; and insupportable anguish; irregular, intermitting pulse; cold extremities; cold sweat; and frequent faintings.

The following are examples of this severe injury: In a case reported by Featherstone,* of a soldier who slipped, and, falling upon his bayonet, wounded the muscular substance of the left ventricle; lived only forty-nine hours; two quarts of blood were effused into the cavity of the chest; the *pericardium* was nearly filled with blood, and had a puncture, which extended three-quarters of an inch into the muscular substance of the left ventricle, about two inches from its apex. On opening the ventricle, the bayonet was found to have penetrated its cavity, and to have cut through one of the fleshy columns of the mitral valve. A small coagulum was formed at the edge of the wound through the *pericardium*. A second case was reported by Dr. Babbington,† of a marine, who fell from the gangway on his bayonet, which pierced through the heart, besides wounding other *viscera*; he died in less than twenty-four hours. The emphysema, which had commenced early at the upper part of the chest, gradually augmented, and, about three hours before death, had reached the head and face, and, before he died, had extended over the whole body.

The external wound was midway between the spine and *linea alba*, and the last rib and crest of the ilium; thence the bayonet had passed through the sigmoid flexure of the colon, through the stomach, two inches from the pylorus; thence through the left lobe of the liver, through the center of the tendon of the diaphragm, and the pericardium; then through the heart near the tricuspid valve, through the lungs, and out of the right side of the chest, between the cartilages of the second and third ribs, terminating in the substance of the pectoral muscle. In the belly there was a little bloody serum; in the *pericardium* a small quantity of blood, but in the right pleura two quarts of the latter fluid.

A third case is reported by Fournier,‡ of a soldier, who received a gunshot wound of the chest, and was taken up for dead, on account of the severe bleeding which had occurred. By great care the flow of blood began to diminish on the third day; his strength insensibly increased, sup-

* *Med.-Chir. Trans.*, vol. ii.

† *Medical Records and Researches*.

‡ *Cas Rares*, *Dict. des Sciences Medicales*, pp. 393-7.

puration come on, and many splinters of bone exfoliated. After three months, the wound was healed; the patient's health restored, without other inconvenience than frequent palpitations of the heart, which harassed him for three years. During the following three years they became less troublesome, and he then died of disease unconnected with the heart. On examination, the cicatrix was found very deep, with loss of substance of the fractured rib. The ball was found lodged in the right ventricle of the heart, near its tip, enfolded, in a great measure, in the *pericardium*, and resting on the *septum medium*.

Gunshot Wounds of the Abdomen.—"In a penetrating wound of the abdomen," says Hennen, "whether by gunshot or by cutting instrument, if no protrusion of intestines takes place, and this, it must be observed, in musket or pistol wounds rarely occurs, the lancet, with its powerful concomitants, *veratrum viride*, abstinence, and rest, particularly in the supine posture, are our chief dependence. Great pain and tension, which usually accompany the wounds, must be relieved by leeches to the abdomen, if they can be procured, by the topical application of fomentations, and the warm bath; and if any internal medicine is given, as a purgative, it must, for obvious reasons, be of the mildest nature. The removal of the ingesta, as a source of irritation, is best effected by frequently repeated oleaginous enemata; indeed, on the first infliction of a wound of the abdomen, the contents of the intestinal canal and stomach are generally evacuated spontaneously by vomiting, and soon followed by stools, which are sometimes tinged with blood; their accumulation must be guarded against by a rigorous diet; for, to the general state of fullness of the vessels induced by food, is added its local and mechanical stimulus, in the undigested form."

Further treatment will be to close the wound with silver wire or pins, apply compresses soaked in tepid water, and a flannel bandage; or occlude the wound from the air by collodion. Look carefully to the position, cause him to lay upon his back, with his limbs drawn up. If pus forms, do not wait for nature to point, open as soon as fluctuation is discovered. Warn the patient against hernia, and, if necessary, apply a proper truss.

Penetration of Wounds of the Stomach, by Stab from Knife, Sword, or Bayonet.—The usual symptoms are vomiting of food, then blood, with fixed pain in the region of the stomach, with anxiety, depression, and all the other symptoms accompanying penetrating wounds of the abdomen. If the external wound be large, a part of the stomach may protrude through it.

Prognosis.—Always very dangerous, from extravasation into the abdomen, and inflammation. Wounds in the middle are considered less dangerous than those in its curvatures.

Treatment.—Do not enlarge or probe the wound. There is little danger of substances es-

caping; plasma is effused, which glues the edges together. Hernia of the mucous coat takes place, and fills the orifice. Let nature alone, give no food, medicine, or drink; if thirsty, permit the use of a little ice, as it is absorbed as fast as melted. Nourish him by injections of broth, etc., by the rectum. If severe spasmodic symptoms be present, give opium in enemata. Apply lint, dipped in cold water, on the wound; if the wounded part of the stomach protrude, a silk thread may be drawn through both edges, and the ends be allowed to hang out. In a case treated by Travers, he tied a ligature around the wound of the protruded stomach, and the patient recovered. If inflammation should arise, treat it actively. If the stomach is simply strangulated in the wound, dilate the latter, rather than handle the stomach. Inclose the edges of the stomach, if wounded, and the integument in the suture. After forty-eight hours, the loop may be withdrawn, because adhesion to the peritoneum has taken place.

If a fistula remain, the opening must be kept closed by compressing apparatus.

Penetrating Wounds of the Intestines.—The intestines may be wounded by sword, bayonet, or gunshot.

In slight stabs, the opening of the wound is always closed by the protrusion of the inner coat; if longitudinal, the edges of the wound always turn out, and, from the contraction of the longitudinal and transverse fibers of the gut, the wound assumes an oblong form. The symptoms of wounds of the intestinal canal are vomiting incessantly, sometimes of blood, and even of feculent matter; fetid air and feculent matter escape from the wound; if the wounded gut protrude through the opening, it is found collapsed, and the wound in it may be seen. If the wounded intestines be in the abdomen, these symptoms often appear, and the injury of the intestine can only be presumed, from the depth to which the instrument has penetrated. If the wound of the intestine is small, pucker up the opening with a pair of forceps, then tie a ligature around the base, cut off the end, and return into the abdomen; plasma is effused, and the ligature cuts its way, and escapes into the cavity of the intestines. Treat small sloughs in the same manner. If the opening be oblique or transverse, and half an inch long, use the glover's suture, bringing the serous coats in contact, that adhesion may take place; introduce the suture a little distance from the edge, and let an assistant depress then, when the suture is tied; then cut off both ends, and return into the abdomen. The ligature escapes in the same manner as before. In the wound in the abdomen, if from a sword, and long, take care to unite it by pins, passing these carefully through the peritoneum, with a small gum-elastic ring, cut off from a tube, passed over the protruding ends.

"Larrey carefully unites wounds with the glover's stitch, folds them in opposite directions,

and brings them together with two threads of different colors."

"Hennen says that he has had only two cases of wounds of the intestine, one with a shoemaker's knife, and the other with a sabre, and he practiced the mode by a single stitch in the abdominal parietes, and then closed the wound: * * * cutting off both ends of the ligature, and a perfect cure was effected in a few days in both cases."

The following remarkable instance of a ball, which penetrated the abdomen and intestines, and, after a time, passed by the natural passage, is from Hennen:—

Case.—Sergeant P. M. received a ball in the belly on the evening of the 18th of June, 1815, which struck him "upon the right side, about an inch below the navel, and three fingers' breadth to one side. Scarcely a tinge of blood followed the wound.

"He did not fall, but walked about fifty yards to the rear, from whence, in half an hour, he was carried to a large barn in the village, where he remained for three days before he was conveyed to a hospital at Brussels. During this period he was bled three times, *ad deliquium*. The first vein was opened about twenty-four hours after the receipt of the wound. On his arrival at Brussels, his principal complaint was incessant straining to stool, for which he received daily clysters. On the sixth day from the receipt of the wound, immediately after an enema, he had an urgent call to the close-stool, when he passed a small-sized musket-ball, enveloped in mucus, and unaltered in shape, except a small groove indented in it, probably from cutting along the bayonet or ramrod of the piece from which it was fired.

"The wound was perfectly healed on the 26th of August following, without any ill accident or uncommon occurrence from the time of receiving it, except that, during the course of the first night, he was sensible of a sort of watery oozing that moistened the linen placed on his wound, particularly whenever he drank, which he frequently did. This circumstance he was never afterward sensible of. He joined his corps at Paris, but had not been more than ten weeks there, when severe pain again arose in the bowels; some bits of cloth were passed by stools, an abscess formed externally; and every symptom threatened approaching *peritonitis*, which was relieved by active means, under the charge of Staff-Surgeon Dease. In the following year he was seen: his general health was good, but if he indulged in a full meal, he felt severe pain in the part."

Gunshot Wounds of the Liver.—Severe injury of the liver, from gunshot and penetrating wounds, is to be suspected from their depth and direction. A large amount of blood of a deep, black color flows, frequently mixed with bile; there is pain of a deep-seated character in the right hypochondrium, which extends to the right shoulder.

The prognosis depends upon the severity of the wound; if deep seated, and tearing the large vessels of the liver, extravasation of blood and bile occurs into the cavity of the abdomen, which usually terminates fatally. If the wound is only superficial, by causing adhesion between it and the peritoneum the patient may be saved.

Treatment should be strictly antiphlogistic, placing the patient on his right side, so that all discharges will flow out. To check the bleeding, employ ice and leeches to the rectum. If the wound suppurates, apply poultices, with a supporting bandage to the abdomen.

Wounds of the Gall-Bladder.—These are considered possible without injury to the liver; they are characterized by extravasation of bile into the cavity of the abdomen, and are considered fatal. Gooch quotes from the *Philosophical Transactions* the case of an officer, who received a wound in the inferior part of the gall-bladder without the adjacent parts suffering any considerable injury.

The *abdomen* was immediately distended, as if the patient had been afflicted with *ascites* or *tympanitis*, which continued till his death, about a week after receiving the wound. His bowels remained obstinately constipated, purges and clysters having no effect; and though considerable doses of opiates were given, they procured little or no ease. The external appearance of the wound was pale, crude, and flaccid. On the fifth day complained of nausea, and had slight hic-cough; his pulse was strong, equal, and slow, till the day before he died, and then intermitted a little. His senses were perfect till death.

Wounds of the Spleen.—Wounds of the spleen are almost always fatal, owing to the large amount of blood lost, and its acting as a foreign body in the abdomen; yet there are instances on record, where patients have recovered from very severe wounds, in which the spleen has protruded through a wound in the abdomen, and has been partially removed, and yet the patient did well. The well-known instance of the soldier who was found, after the battle of Dettingen, with his spleen protruding and covered with dirt, is a case in point. The surgeon not liking to return it, cut it off; and yet the patient recovered.

Also the interesting case, reported* by W. B. Powell, M.D., of Kentucky, of a man, aged thirty years, who was stabbed, at night, in the left side, about four inches anterior to the spine, by a knife or large dirk; two inches of the spleen protruded, and being prevented from reduction on account of a slit in the protruded extremity one inch in length, which induced him to believe that such an act would endanger the patient's life from internal hemorrhage, though but little blood followed in consequence of the stricture of the lips of the wound. On the following morning the spleen was in a state of high inflammation; he,

* Amer. Jour. Med. Sci., vol. i. p. 481, 1827.

in consultation with Dr. Bennett, of Newport, Ky., amputated the protruding part, first applying a ligature from a slip of a tendon. He then attempted to make a perfect reduction of the spleen; but found it impracticable, without the use of injurious force, to get the amputated extremity of the spleen below the diaphragm, because of the great contraction of the muscle; it was therefore left to nature, by closing the external wound. He took a pound and a half of blood from his arm; put him in bed, prescribing light diet, and an absence from company. On the third day his pulse, skin, etc. indicated an unusual degree of constitutional excitement, which was subdued by *antimonii et potassæ tart.*, with *sodæ carbonatis*, in small doses, and bread and milk poultices to the wound. On the fourth day, healthy pus was discharged from the wound for three days; and then it was discharged internally, followed by symptoms of peritoneal inflammation, which yielded to the administration of the above-named medicines, with warm fomentations and evaporating lotions to the abdomen. After this, he continued to improve; and on the fourteenth day was discharged, though the wound was not entirely cicatrized. Dr. Powell saw him nine months after, when he informed him that the wound was perfectly healed, and that he enjoyed excellent health.

Gunshot and Penetrating Wounds of the Bladder.—In naval and military operations the bladder is wounded, more especially when full and raised out of the pelvis. These wounds are more or less dangerous, depending upon the wounding of the *peritoneum* or the *infiltration of urine* into the cellular tissue.

The treatment is to leave the wound open, introducing a large catheter into it that the urine may be carried off. Place your patient on a strictly antiphlogistic treatment, with as little fluid as possible, and let the wound heal by granulations, or if very extensive, close a part by sutures, with light dressings.

According to "South,"* in the museum at St. Thomas's Hospital is the ball which was received by Colonel A., while in action before Alexandria; it was a grape-shot, which, passing through the right ischiatic notch, taking a circuitous route through the pelvis without wounding any large vessel or nerve, and came out under Poupart's ligament on the left side, and was found in his pantaloons. In its passage, the ball had wounded both the *rectum and bladder*; and he was removed on board of ship under the care of Mr. Este, who found him sinking very fast. He, however, constantly applied poultices, as hot as could be borne, and gave him bark, camphor, ammonia, etc., with brandy and bottled porter, by which latter he was much refreshed. The physician-general was called in consultation, who stated that recovery was impossible—the wound being gangrenous, discharged extremely, and was in-

tolerably offensive. The feces and urine passed through the lower wound, but there was no natural evacuation by the *rectum* or *urethra*. After some few days a favorable change in the wounds commenced: the sloughs separated, healthy pus was discharged, granulations were produced, and the wounds healed. The feces at length, and also the urine, passed by their natural channels. When able to use crutches, he was sent in a convalescent state to Malta.

Stricture of the rectum ensued, of which he was cured by Sir A. Cooper, and some of the gold-lace of his uniform came away.

Case 2.—M. M., aged forty years, a healthy sailor, was admitted into St. Thomas's Hospital under the care of the celebrated surgeon Cline the elder

Feb. 20, 1812. "It appears that in July, 1811, during an attempt to cut out a schooner, he received a shot in the right hip; the ball entered the *dorsum ilii*, obliquely downward, within about two and a half inches of the sacrum, and an inch above the ischiatic notch, while he was sitting pulling an oar, which he continued to do for some time after. The wound bled profusely, and in a few minutes after he had great inclination to make water, which was done with great difficulty and pain, only coming away by drops. On the following day he was carried to a hospital at Cadiz, where for three or four days he continued to discharge his urine only in drops, and accompanied with burning pain, when retention of urine took place which remained for four days, occasionally being relieved by the catheter; at the end of which time the cause was explained, by a piece of shirting and of his trowsers having made their way up to the orifice of the urethra, closely rolled up to about the size of a goose-quill and two inches in length.

"Upon extracting this, by means of a pair of dressing forceps, the retention of urine was completely removed. During the time of retention, and then only, did urine mixed with bloody discharge pass out at the wound of the ilium. For several days after the extraction of the wadding, there was a discharge from the urethra of thick, ropy mucus mixed with blood.

"The urine passed freely, but with heat and pain referred to the end of the penis, and a frequent desire to void urine. These symptoms continued, except that latterly there was difficulty in passing his water. The wound had healed about a month previous to his admission into St. Thomas's, having a stiffness and pain in the motions of the limb. The bullet was found encysted on the left side of the bladder, much flattened, and having a small portion of bone adhering to it. He recovered very quickly after the operation."

In concluding this series of papers on military surgery, let me hope that my efforts to contribute to the knowledge of the volunteer surgeon engaged in the cause of his country, may not have been entirely fruitless. Having commenced their publication prior to the appearance of any of the now numerous and valuable works on the subject,

I felt that a void existed, which might better have been filled by others. Many points have been omitted, being regarded merely as of theoretical value; yet the author has received gratifying evidence that his labors have been appreciated by those engaged in the field and hospitals, endeavoring to relieve the sufferings of the brave men who are fighting in the defense of their glorious country.

Illustrations of Hospital Practice.

PHILADELPHIA HOSPITAL.

MEDICAL CLINIC.

Service of Dr. Da Costa.

January 18, 1862.

ANEMIA—BLOOD DISASE.

The above case (see last number, p. 388) proved fatal, and the *post-mortem* appearances were exhibited and explained to the class. The diagnosis of enlargement of the liver, particularly its left lobe, and of congestion of the lungs, and bronchitis, as deduced by the dry râles heard over almost the entire surface during life, is confirmed. There is also a slightly congested condition of the stomach which is common to those who drink intoxicating liquors to excess. The impulse of the heart, we told you, was feeble. The cause is now apparent. There is a tendency to fatty degeneration, and some effusion was found in the pericardium. In addition, we find the kidney to be fatty. A fatty liver in drunkards is common. I have been struck with the frequency of fatty kidney in those dying from drunkenness in this house. Returning then to the liver, we find in it a morbid growth which is evidently cancerous, and must have been of long standing. The history of the case seems to contradict this, for we were told she had been well up to two weeks ago; but the liver is before you. The cancerous nature of the affection of the liver cannot be disputed; and it was so entirely masked by the acute symptoms which made themselves prominent, as to be revealed only by the *post mortem*. This is the second case of this kind which has come under my notice. In the other case, supposed epithelioma, the patient, after an operation for external tumor, complained of a pain and swelling in the region of the liver; had bronchial symptoms, as in this case, and the *post mortem* revealed a similar condition of the liver; and these facts show that in a certain class of cancerous affections, the chronic form may pre-exist without any marked symptoms to denote it, at least as far as the patient is aware, and suddenly cancerous masses develop themselves with signs of acute congestion. But suppose the previous history of this case had revealed chronic disease, are there any symptoms by which cancer could have been diagnosed? So far as primary cancer

of the liver is concerned, the diagnosis is quite uncertain. In regard to the chronic form, enlargement of glands of the neck and those near Poupart's ligament have been regarded as pathognomonic, but they are not entirely so, for they are sometimes absent. The tenderness on pressure, which is always present, and the irregular surface of the liver, are more nearly diagnostic of cancer. You observe upon this specimen certain round, whitish, nodular spots forming morbid deposits in the substance of the organ, but not at its edges. Morbid deposits in the liver are most likely to be cancer. As we cut into them, we find a peculiar yellow appearance, and observe the breaking down and softening of the mass, some portions having a peculiar fatty appearance.

DYSENTERY—DIARRHŒA.

J. T., aged 44, painter, always previously in good health, was taken five months ago with diarrhœa; came on gradually while working at his trade; had eight to ten discharges each day, attended with tenesmus, and with blood mixed with slime and mucus; was admitted to hospital four months ago; his countenance now is pale, anæmic; tongue pale, clean; red globules of blood evidently greatly deficient. Pressure upon abdomen produces no pain, but there is slight tenderness over the transverse and ascending colon. His appetite is impaired. His treatment has been injections of acetate of lead in solution, and he has also taken it internally. This is a case of chronic diarrhœa with dysentery. In contrast with this case I present you another. J. F., aged 60, has diarrhœa eight weeks; discharges very frequent at first, could hardly count them; now, some six during the day; no blood; slight griping; no mucus in discharge; tongue clean, red. Observe the contrast! No pain or tenderness in the epigastrium; appetite good; digestion good; no tenderness of abdomen; liver not enlarged in either case. Treatment the same as the other. Here you have a case of pure diarrhœa. And these are the types of an epidemic which is prevailing to a large extent in this city, the pathology of which, in my opinion, is a localized congestion of the whole tract of the intestinal canal, the glands scattered along its length not pouring forth their normal secretions.

In one of these cases before you, such congestion I think exists, and should be treated by counter-irritation; and that irritant may be turpentine and acetic acid, each one part, rubbed over the whole intestinal canal. In addition, let him take the following mixture three times a day:—

R.—Plumbi acetatis, gr. ij;
Ipecacuanhæ, gr. ss;
Opii, gr. ʒ. M.

His diet should be nourishing—that which is easily digestible.

In the other case there is no congestion, and no local treatment is required. He may take the

same mixture, only giving the acetate in one and a half grain doses instead of two grains.

Ipecacuanha is an excellent remedy in these affections. It acts as an alterant to the mucous surface.

SEVERAL CASES OF DROPSY.

January 22d, 1862.

J. R., aged fifty-two, from Delaware, bricklayer for twenty-five years, married, has been sick over one year; came on, as he thinks, from a heavy cold in his chest, which was followed by night-sweats during the winter following; has lost flesh greatly. A few months ago, felt something give way in his left side while lifting a heavy load; a stinging sensation followed the injury, and very soon his limbs began to swell. His tongue is slightly coated in the center; he has great shortness of breath; his eye has a slight yellow tinge; his pulse is feeble; his abdomen is enormously swollen, encroaching upon and interfering with the movements of the diaphragm.

Now, what is the nature of this swelling? It might be a tumor; yet a tumor does not exhibit the uniform extensive swelling observed here. A tumor is generally upon one side of the abdomen, and not extended over its whole surface. But we here have marked dullness upon percussion everywhere, except for two or three inches above the umbilicus, where it is tympanitic; yet percussion alone gives no test of the presence of fluid; a more certain method of diagnosis is succussion, which is performed by placing the fingers of the left hand upon the left side of the abdomen, and striking the opposite side sharply with the fingers of the right. This causes the fluid, if present, to vibrate against the fingers of the left. Tested in this manner, we find this enormous enlargement of the abdomen in this case to be occasioned by the accumulation of fluid within its walls.

On what does this dropsy depend? If we percuss the lungs, we find them clear, both anteriorly and posteriorly; if we examine them by auscultation, we find the respiratory murmur normal on the left side; on the right posteriorly, harsh. There is no disease within the chest sufficient to account for the dropsy. The heart sounds are feeble; impulse of moderate strength; the organ not enlarged. In nearly all cases of dropsy, either disease of the heart, kidneys, liver, or blood will be found present. Having thus excluded the heart as the organ at fault, we must seek for the cause in the liver or kidneys. There is no enlargement of the liver, nor of the spleen. Turning now to the kidney, we examine its secretion; the urine is high colored, specific gravity 1031. Testing it by heat and nitric acid, we find no albumen. You will observe I say heat and nitric acid; for by heat a deposit may be thrown down, which may be albumen, or it may be something else; and so by nitric acid alone, the deposit may or not be albumen. The correct method is, that by both heat and the acid. Applying this test, we find no albuminous deposit. Still the kidney may be affected; for the

microscope reveals tube casts and some organic deposits in the renal secretion. There is evidently a morbid process going on in both the liver and kidneys, though the urine reveals but a slight amount of disease in the latter.

In the treatment of dropsy, the kidneys and skin should be made use of, as the medium through which the accumulated fluid may be eliminated from the body. The warm and vapor baths, diuretics, as uva ursi, benzoate of ammonia, are appropriate remedies. When kidneys are but slightly diseased, and when they are healthy, purgatives may be used, as croton oil, elaterium, gamboge. Oftentimes great relief is experienced from a free evacuation of the bowels; but purgatives should not be employed too frequently or constantly. Diuretics are preferable to purgatives in most cases; yet all remedies are sometimes of no avail, and the evacuation of the fluid by tapping is required.

In this case, give one-twelfth of a grain of elaterium as a purgative; also twenty grains of acetate of potash, dissolved in water, three times a day, as a diuretic.

In contrast with the foregoing case, the lecturer exhibited to the class a case of *pendulous abdomen*, by which he illustrated more clearly the points of differential diagnosis. The former gave a dull sound on percussion, the latter is everywhere tympanitic. The latter came on gradually, and gave no suffering; the former was quite the reverse. The latter was a relaxation of the abdominal walls, and an accumulation of fat; in the former, the walls were distended by the presence of a fluid.

GENERAL DROPSY—BRIGHT'S DISEASE.

The next case was that of George W., aged eighteen, a native of New York; admitted to Children's Asylum at the age of sixteen; has always been in delicate health; had measles, scarlatina, and small-pox; four years ago had ophthalmia of right eye, which destroyed the sight. While in Children's Asylum, suffered severely from asthma and oedema of the lower extremities, interfering with locomotion. His countenance is extremely pale, and has a waxy hue; his lungs, on percussion, are clear; heart frequent in action, and impulse extends over several intercostal spaces; no blowing sound; second sound very distinct, indicating that it is enlarged and thinned in its walls. Over both lungs, there is a fine crepitation, precisely such as occurs in the commencement of a pneumonia. How will you distinguish it from the condition of the lungs in this case, which is that of oedema? By the fact that in the latter the crepitation is heard on both sides; in pneumonia, a deposit of soft lymph is diffused in the cells of one side; in oedema it is a transudation of serum in both lungs. Then, again, the sputum of oedema is ordinary, possessed of no peculiar characteristics, or is frothy: in pneumonia it is rusty colored, and attended by symptoms of hepatization or consolidation of the lungs. This diagnosis is vastly im-

portant with reference to the treatment to be pursued.

But, pursuing our investigation further, we notice, in addition to the waxy hue, a puffiness of the whole face, and a swelling of the eyelids. On examining the renal secretion by acid, we find a dense, white deposit, which will not disappear upon the application of heat. The albumen of the urine is fully equal to 60 per cent. of the fluid. In some cases of so-called Bright's disease, however, we may have a slight quantity of albumen, which may not be persistent, entirely disappearing at one time, and again reappearing for a short period; a slight leakage of albumen from the blood, as it were, which soon ceases. Not so in this case; we have here also other evidence. Examining the urine by the microscope, we find broad tube casts, covered with urates and with broken-down epithelium. The urine is pale in color, specific gravity 1018. We therefore infer that we have in this case Bright's disease, with cedema of the lung and general dropsy. Cedema of the lung occurs frequently in this disease, and forms one of its worst features. Dyspnoea must result, for the blood cannot be well aerated.

SURGICAL CLINIC.

Service of Prof. Gross.

January 22, 1862.

INTRA-CAPSULAR FRACTURE OF THE FEMUR.

This was the case of a female who gives her age at 110, and says she was about 50 when the battle of Waterloo occurred. As she was walking she slipped upon the pavement, striking her right hip upon the curbstone; violent pain immediately followed, and she was unable to rise or walk. You will observe the appearance of the limb; it is everted, resting upon its outer surface in its entire length; it is shorter than its fellow by nearly two inches; there is tumefaction and slight discoloration about the hip; the heel is turned inward and drawn upward, and occupies a position upon the tendo Achillis above the heel; there is also preternatural mobility on manipulation; the patient has no power to lift the limb or to control its motions; by extension and counter-extension, it is restored to its proper position and length; distinct crepitation is heard at the hip-joint; the trochanter is remarkably prominent, and as the limb is rotated, that protuberance moves over a larger space than in a dislocation. From all these symptoms, which contradistinguish it from a dislocation in any direction, we infer that we have a fracture of the neck of the femur within the capsule. The extreme age of the patient and the well-understood fact that the bones of aged people are exceedingly brittle from imperfect nutrition, tend to confirm the diagnosis. Now what is the appropriate treatment in such cases? Bony union cannot be expected; if there be any union at all it will be fibrous. The proper position for such a limb is the straight one, and for the patient to

be confined to the bed. But in this case this treatment is inapplicable; union here is improbable, and confinement would necessarily produce great suffering. Place the limb upon an inclined plane for a fortnight; give her good nourishing diet—stimulants if necessary. Why no union here? The lymph will be thrown out in small quantities, from the fact that the round ligament is the only medium through which nutrition is now conveyed to the bone, and then again the fractured extremities can with difficulty be kept in apposition.

Medical Societies.

CLERMONT COUNTY (OHIO) MEDICAL SOCIETY.

We find an interesting report of this Society's proceedings at their meeting at Batavia, October 16th, in the *Lancet and Observer*, from which we make the following extracts:—

"Dr. Coombs read a lengthy production on dropsy of the amnion, evincing much research, and also reported several cases of poisoning by mushrooms.

"Dr. Mullen reported a case of supposed extra-uterine pregnancy of two years' duration. The woman's health had continued good.

"Dr. McLain reported a case of uterine hemorrhage of seven weeks' continuance, at the expiration of which time the woman was delivered of a living child.

"On motion, the rules were suspended, and, by a unanimous vote, Dr. I. McMillen was expelled from the society for drunkenness.

"Dr. Crew reported a case of prolapsus ani, supposed to result from stone in the bladder.

"Dr. Rogers related the following circumstance, showing the tendency of loss of blood to destroy the susceptibility of the system to the narcotic effects of opium. 'A lady having nearly expired from flooding, he called for the wine-bottle. A bottle of laudanum was handed him instead, but before he detected the mistake he gave her nearly an ounce at a draught. The patient revived speedily, manifesting no other effects of the laudanum.'

"Dr. Mendenhall reported the following case: 'On the 22d of May last I was called to see Mrs. C., in labor. She was of small stature, and had borne three or four children previously. On examination, I found a remarkable obliquity of the uterus forward; the fundus hanging within close proximity to the knees; the os was drawn up above the symphysis pubis, and dilated. I immediately gave her a large dose of castor oil, and had her placed horizontally on her back, from which position she was not allowed to move. During pains I used strong pressure upward on the fundus. In about eight hours the child was born, when excessive flooding immediately commenced. Disposing of the child as soon as pos-

sible, I made an examination, and found the placenta adherent. The hemorrhage continuing profusely, I lost no time in introducing my hand into the womb. When it entered I found quite a large cavity, the walls of the lower portion of the womb being flaccid. Above this cavity the womb was contracted tightly around the cord, and a small portion of detached placenta, which was hanging loosely below the contraction. I kept my hand in the womb about five minutes, when no alteration taking place in its condition, and the hemorrhage continuing, I withdrew my hand for the purpose of using other means. I gave her one-third grain morphine, and made cold applications to the hypogastrium. Some fifteen minutes from this time I introduced my hand again, but still found the hour-glass contraction. The woman's strength was now rapidly failing. I gave her hot toddy, and repeated it every few minutes, with one-eighth grain morphine every half hour after the first dose. Two hours after delivery she had taken half a pint of whisky, when the power of deglutition failed, she was unconscious, and pulseless, her breathing hurried, surface cold as a corpse, and bedewed with sweat. At this stage of the case I found the placenta in the vagina. All that could be done now was to make warm applications to the surface, which was done as effectually as possible. After she had remained pulseless and cold as clay for four hours, I noticed some returning natural warmth about the chest and upper part of the arms. An hour later, the pulse was just perceptible at the wrist, when I left.

"On my return, ten hours later, I was informed that consciousness did not return for four or five hours after I left, but the patient was now comfortable, and done well after this.

"Several points of interest present themselves in this case, but the most remarkable feature is that of the patient's recovery after the great loss of blood sustained, and the effects produced by it. Her safety was, no doubt, mainly due to the morphine. Opiates are the most direct and permanent stimulants of the brain, and through the effect of the morphine on the brain the heart's action, though feeble, was kept up until the recuperative powers of the system had reproduced enough blood to maintain life. I did not, however, regard the whisky and external application of warmth as unimportant adjuvants."

EATON (OHIO) MEDICAL SOCIETY.

The semi-annual meeting of this Society was held on the 10th of October. The President, Dr. W. Lindsay, delivered his inaugural address, in which he called the attention of the Society to the necessity of self-protection and self-improvement.

"The object of the Eaton Medical Society is the diffusion of knowledge among its members—knowledge obtained by the advancement and review of medical science. The necessity for such

an organization is admitted by all intelligent physicians, as a recital of knowledge obtained by investigation can, in this way, be communicated more efficiently and more rapidly than by any other means.

"Article third of the society's constitution reads thus: 'Any regular physician, in good standing, may become a member of this society, by a vote of three-fourths of its members present.' Who, then, is a regular physician? One who has received a regular medical education. That, and that alone, furnishes the only presumptive evidence of professional abilities and acquirements, and ought to be the only acknowledged right of an individual to the exercise and honors of his profession.

"The following resolutions, presented by the secretary, were unanimously passed:—

"1. 'Resolved, That it is as necessary for a physician to take one or more medical journals, and to belong to a medical society, in order to be in good standing, as it was for him to study medicine before he could be licensed to practice.

"2. 'Resolved, That, as the regular medical profession has no secret medicine, no man can be in good standing who pretends to have a secret medicine. If a medicine is good, any concealment regarding it is inconsistent with professional liberality; and if the compound will not stand scientific investigation, then the use of it implies disgraceful ignorance and fraudulent avarice.

"3. 'Resolved, That this society sets the seal of its disapprobation, by a unanimous vote, on any practitioner of medicine who pretends to have a secret infallible medicine for diphtheria or asthma."

EDITORIAL DEPARTMENT.

PERISCOPE.

Weekly Summary of American Medical Journalism.

By O. C. GIBBS, M.D.

HOW CHLOROFORM PRODUCES DEATH.

In the *Lancet and Observer* for November, Dr. H. Culbertson, of Zanesville, Ohio, has an able and interesting article under the above heading. Sixteen experiments were made upon animals; chloroform was administered to dogs and pigs until death was produced, and an examination of the bodies made with reference to the establishment of certain points of inquiry. We have not the space to give a synopsis of the experiments or of the results; we will simply give Dr. Culbertson's own conclusions:—

"Conclusion 1st. That from the effect of chloroform by inhalation, the lungs will cease to act first, and the heart last.

"2d. That rapid chloroforming does not always produce congestion of the lungs.

"3d. That when congestion of the lungs does result, it is sometimes greater in one than in the other, and often present in one and absent in the other.

"4th. That collapsing of the lungs in these cases occurred in every instance inversely as congestion was more or less marked.

"5th. That we can offer no satisfactory explanation why chloroform should sometimes produce congestion of the lungs and heart, and again paralysis of these organs, save that it may result from being too profusely or rapidly given. Consequently, to obtain the safest effect of the agent, it should be slowly exhibited, and a large proportional supply of fresh air admitted, that respiration may be unarrested and insensibility gradually induced, by the agent passing through the circulation and reaching the sensorium.

"6th. That the chloroform enters the circulation and pursues the natural course of that system, and therefore it cannot travel from the lungs to the right auricle, but must course from the right heart to the lungs after it has passed through the systemic circulation.

"7th. If the anæsthetic is applied to the lungs, there is either no congestion of these organs, and much dilatation of the heart, or congested lungs and heart.

"8th. It is immaterial whether the paralyzing agent be applied locally to the medulla, or to the lungs. In the latter case a longer time will be required to kill, provided the case is purely of the paralyzing character, and less, if congestion of the lungs result.

"9th. That the more potent the paralyzing agent is upon the medulla, the sooner does death ensue, and the less is the heart dilated and lungs congested.

"10th. That chloroform may produce a general excitement by being applied to the nervous radicles of the nose, throat, and lungs, and also induce local anæsthesia wherever applied. Yet, to produce insensibility, it must reach the sensorium by circulation, and to cause death by paralysis it must locally impress the medulla oblongata. It matters not how much benumbed the afferent nervous radicle of the endocardium by the local action of the anæsthetic, the medulla will continue to be excited by the blood circulating in it, and thus motor agency be sent down to the heart, until the medulla too is paralyzed.

"Again, the heart is mostly supplied from the sympathetic; consequently, could the restorative pass to the medulla, but little effect would reach the heart through the few cardiac motor branches of the pneumogastric. From such considerations as these, it would seem that restoration is probably impossible after the heart has ceased to beat.

"It may be that in our experiments we have not properly used the galvanism, and that an exciting fluid could be passed through one of the

internal carotids direct to the medulla, and thus stimulate the latter to motiferous action; but this remains to be investigated.

"16th. That congestion of the brain in these cases seems to be a rare result."

In reference to the experiments and conclusions of Mr. Sansom, as published in the *London Lancet*, Dr. Culbertson makes eight other experiments. From these he derives the following conclusions:—

"1st. That chloroform cannot be applied either directly to the brain, or through the medium of the circulation, to an amount proportionate to the powers and idiosyncrasies of the individual, without producing *unconsciousness*.

"2d. That chloroform, to induce insensibility, must enter the circulation and locally impress the sensorium.

"3d. That anæsthesia may be aided by the presence of carbonaceous compounds in the blood, but that this is subsidiary to the presence of the chloroform in the blood acting upon the nervous centers.

"4th. That chloroform, diluted as it is by the serum when it enters the blood at the lungs, and onward in its course, cannot produce any change in the functional action of the red globules.

"5th. That the red globules may be corrugated and deformed by the action of undiluted chloroform out of the vessels, but not when diluted.

"6th. That aggregation of the red corpuscles is not a peculiar effect of chloroform on these, but arises from approaching stasis within, and from a well-known aggregative tendency when without the vessels.

"7th. That chloroform first induces excitement and contraction of the vascular system, and then sedation and dilatation, and ultimately stasis."

In reading Dr. Culbertson's paper, a few thoughts have occurred to our mind that perhaps are not sufficiently matured for expression, without exposing us to criticism. Asking our reader's indulgence, we propose a thought or two not brought out in the paper. Is it not possible that deaths from chloroform are partially the results of causes that may be denominated mechanical? That chloroform first morbidly impresses the nervous centers is doubtless correct; but this impression upon the nerve centers must modify the nervous influence conveyed to the various structures and organs of the body, and thus modify function and disarrange organic action, thereby disarranging the machinery of life in such a manner as to bring the whole to a stand.

In the experiments made, the heart was unnaturally and even greatly distended, particularly the right side. The right side receives the venous blood from the system, and sends it to the lungs

for its requisite changes. This condition of the heart shows one of two things—either the force of the heart's action is diminished by partial paralysis, or else the resistance to be overcome is greater than usual. The heart is the last organ to cease its motion; though this fact does not prove the absence of diminished force, yet it is presumptive evidence against heart paralysis. The lungs were mostly found collapsed, and never engorged with blood. This fact would seem to show unusual resistance in that direction. We would here inquire if any experimenter with chloroform has observed an unnatural contraction of the arteries and veins, particularly their smaller ramifications? Should this condition be found to be a fact, as the result of chloroform inhalation, it would account for many other conditions present, such as engorgement with blood the central organs, as the stomach, liver, spleen, membranes of the brain, etc., as well as for the distention of the heart with retained blood, which it had not the power to throw forward to go the rounds of the system, equal to the extra resistance—embarrassed by the unusual pressure of venous blood forced into it.

We have inhaled chloroform many times, to observe its influence in the stage before consciousness is lost. Among the first is a sensation of coldness of the bottoms of the feet, as though they were immersed in cold water. The blood-vessels about the neck and head begin to throb with audible distinctness. There is a sensation of fullness of the eyes and head—the very brain seems to throb, and thought becomes confused from a sensation of fullness. The surface of the body prickles and feels numb, and imparts a sensation as though the blood was receding from the surface. Discontinuing the inhalation, the symptoms and morbid feelings gradually pass away—the roaring about the head and loud throbings of the heart and arteries gradually die away.

The functions of the brain—cognition of pain, sensation, volition—are the first to be suspended. Whether this is the direct result of chloroform circulating in the blood through the brain, or whether it is the result of the modified action of the respiratory functions and the circulatory system, is not quite clear. If the latter be the true explanation, then chloroform anesthesia is not unlike the anesthesia of apoplexy, or of coma from a depressed portion of cranial bone.

The inquiry intended to be started here is, whether or no the insensibility is not the result

of the disturbed function or mechanical action of the lungs, heart, and blood-vessels; and whether death does not really commence at the brain, as evinced by the stertor, the lungs following next, as evinced by a cessation of function and probable collapse, and the heart being the last to die, which last accounts for the fact observed by many, that restoration never takes place after the heart ceases to beat?

KEROSOLENE.

Since kerosolene was first brought before the profession as an anæsthetic, we have carefully watched the journals for the opinions of those who have given the article a trial. From a pressure of business, and ill health in our household, we are nearly two months behind in our reading, but, so far, our readers have been apprised of the opinions of those who have put it to the test, and we shall continue to do so until its merits or demerits shall determine its establishment as a valuable agent, or rejection as a worthless one. Ether has objections, and chloroform is not always free from danger. We had hoped that an anæsthetic might be found pleasant to inhale, prompt, efficient, and uniform in its action, and free from danger. Having carefully read an account of the experiments of those who had tried kerosolene, and particularly noticing the unfavorable experiments of the junior editor of the *Chicago Medical Examiner*, in our Summary last week we predicted that the remedy would soon be abandoned as worthless, unless, by some process of purification, the most favorable results of those who have tried it can be obtained with tolerable uniformity by all who may put it on trial. Before the Middlesex East District Medical Society, (Mass.,) as per report in the *Boston Medical and Surgical Journal* for October 10th, several of the members thus report their experience with the article under consideration.

"Dr. S. A. Toothaker, of Wilmington, said that he had administered the article, which was distributed at the last meeting, once, with the most satisfactory results. It acted quickly; there was no suffocative difficulty, no nausea, and no convulsions. The patient was a young man who had just recovered from tonsillitis, and the operation was for the extraction of a tooth. Upon inhalation, he began to laugh, and opened his mouth in such a manner as to afford an excellent opportunity to apply the forceps. The tooth came very hard. The man made some noise, and in a minute or two recovered his sensibilities. He knew nothing of the extraction, except by the

blood in his mouth. He was very lively and 'chipper,' and expressed himself as having had a pleasant dream. Quantity administered, one and a half fluid ounces. Whole time occupied, five to six minutes.

"Dr. H. P. Wakefield, of Reading, gave it twice to one patient with success. He was a shoemaker, who had hurt two of his fingers by working on 'army shoes.' At the seats of injury there was pus. Kerosolene was administered upon a cloth. He came under its influence very readily, and 'lost himself.' He was inclined to laugh, but he would not keep still, and as the doctor had no assistant, the operation of opening the abscesses was deferred. He soon recovered, and was dismissed to return again with a friend. He did so, and the kerosolene was given as before. He readily came under it, but not to insensibility. The assistant held the wrist, and both fingers were opened to the bone. He seemed just to feel it. On coming to himself, he said he did not suffer anything. He passed from the influence of the kerosolene as readily as he came under it. Quantity employed in both trials, three fluid ounces. No nausea, no suffocative difficulty, nor unpleasant effect. Dr. Wakefield thinks the kerosolene more powerful than chloroform.

"Dr. R. L. Hodgdon, of West Cambridge, employed the kerosolene received at the last meeting, in a case of Barton's fracture of the radius. The patient went quickly off to sleep. There was no change in the pulse, and sensibility was recovered sooner than with ether, and the patient came under it more easily. Quantity administered, two fluid ounces. He also gave it to a woman for the extraction of four teeth, with success. In fact, the doctor expressed the highest satisfaction with the results of his trials.

"Dr. A. Chapin stated that he had taken the kerosolene himself, with the effect of sudden anesthesia. He also remarked that he had given it to a lapdog. A sponge and the dog's head were placed in a coat-sleeve, and the kerosolene poured upon the sponge. The animal came under it kindly, easily, and quickly. Compared with the action of ether and chloroform upon this class of animals, the doctor stated that kerosolene had, in this case, marked advantage, in the ease with which it was taken, and in the speediness of its action. There was no suffocation, no convulsions. The dog never came to; it was killed by a hatchet."

What for? As Dr. Wakefield thinks it is more powerful than chloroform, we would inquire if anesthetics are dangerous in proportion to their power?

We certainly hope these good results may be uniformly obtained, and the article be found utterly free from danger. A safe and sure anesthetic is one of the greatest boons to suffering humanity, and may prove particularly so to our half a million of soldiers, daily liable to painful

injuries requiring perhaps still more painful operations. In the Crimean war, in 30,000 cases in which chloroform was inhaled, only two deaths occurred.

HYDRARGYRUM CUM CRETA AN UNRELIABLE AND UNSAFE REMEDY.

Before the Berkshire District Medical Society, as per report in the *Berkshire Medical Journal* for October, the subject of the impurities, uncertainties, and often dangers, in the use of the hydrargyrum cum creta, was under discussion. Drs. Duncan, Lawrence, Bostwick, Smith, and Meacham all spoke unfavorably of it; they regarded it, instead of being the "mildest-known mercurial," as often an irritant, producing vomiting and purging.

This brings to our mind an article upon the same subject, by John C. Beck, M.D., of Cincinnati, and published in the *Cincinnati Med. and Surg. News* for August, 1860. From the same prescription, in the same patient, he found widely different results, when filled at different druggists. This led him to an analysis of different specimens. We make an extract, for the subject is of great importance—no mercurial is so much used in treating the diseases of children:—

"One specimen examined, which I supposed was prepared by steam power, exhibited 15 per cent. of the binoxide, which would be easily converted by the hydrochloric acid of the stomach into corrosive sublimate, and consequently it would be fatal to children even in small doses.

"There can be little doubt that the violent effects often produced by the administration of gray powder is due to the presence of binoxide of mercury, which is changed by the hydrochloric acid of the stomach into bichloride of hydrargyrum. As an instance, administer five grains of the gray powder containing 15 per cent. of the binoxide of mercury, the hydrochloric acid of the stomach will form one grain of bichloride of mercury, which would be a fatal dose for a child, and a coroner's jury of inquest would render a verdict of 'Death caused by the administration of corrosive sublimate,' when, in reality, it was the peroxide, till it combined with the hydrochloric acid of the stomach, and the bichloride of mercury was the result of the union. Suppose the quantity larger, 20 or 40 grains, and it is administered to an adult, and from 4 to 8 grains of corrosive sublimate be found on analyzing the contents of the stomach, then if the nurse or some person about the patient be found to have had a grudge or to have quarreled with the patient; in a word, a 'motive' be proven, *circumstantially*, almost any jury would convict the accused; when the corrosive sublimate found in the stomach

would be due to a chemical change of the remedy, and an innocent person might suffer the consequences of this accidental combination."

Dr. Beck found no uniformity or exact ratio in the amount of protoxide and binoxide present in the various parcels examined. Dr. Beck says further, that "upon the whole, I am inclined to the opinion that 'blue mass' is the safest mercurial we have."

RATTLESNAKE BITES, AND THEIR TREATMENT.

In the *North American Medico-Chirurgical Review* for March, Dr. S. W. Mitchell has an interesting article upon this subject, to which we have previously referred. The doctor has experimented largely, and reports unfavorably of *Bibron's antidote*. In the *Buffalo Medical and Surgical Journal* for October, Dr. L. S. Ham, of South Bend, Indiana, reports a case of severe rattlesnake bite, with treatment, which resulted in recovery. The following are his conclusions:—

"The foregoing case shows several important facts in the reception, the progress, and the treatment of this important class of maladies.

"1. The fang wounds were deep, and we have every reason to conclude that all was done that the animal was capable of doing, by way of imparting poison to the system.

"2. The snake was one of the very largest of the *Massasaugus* variety.

"3. The poison had had its local and constitutional effects before treatment was commenced, as shown by the swelling of the hand, the vomiting, and the indistinctness of vision.

"4. The good effects of the antidote are shown by the suspension of the swelling as soon as it was administered, the increase of the swelling as soon as it was rejected, and the suspension of the swelling again as soon as it could be retained on the stomach, in doses equal to from three to five drops per hour. This was very clearly evinced on two distinct occasions in our case.

"5. Its apparent good effects in my hands, and, under all the circumstances, are such as to give me great confidence in its therapeutic powers in this class of cases. Yet, I am aware that it would take many cases and further tests to fully establish its claim to full confidence in the mind of the profession."

FRACTURE OF THE BASE OF THE CRANIUM.

In the *Berkshire Medical Journal* for October, Dr. W. Deming, Jr., reports a case of fracture of the base of the skull. Blood flowed from both ears, and also from the nose and mouth to the amount of several ounces. The patient recovered with the loss of the sense of hearing.

It is quite generally believed that hemorrhage

from the ears is almost, if not quite, proof positive of fracture at the base of the cranium, and such fractures have been regarded as almost or quite uniformly fatal. A very interesting case occurred to us two years ago, which, as it has not been recorded, may not be uninteresting to our readers. •

A young man, about twenty years of age, while felling a tree, lodged it against another. In felling the second, he failed to sufficiently escape, and received a blow upon his head from a limb of the falling tree. He was knocked down, and remained senseless until picked up by his friends. Blood flowed from his ears and nose. We were called in, though the patient was eight or nine miles away, and associated with Dr. Smith in the case. We found the patient irrational, and in spite of remedies he remained so for five or six days. After a time flashes of intelligence began to be discoverable, and when consciousness seemed perfectly restored, he seemed to have lost the faculty of memory. The recognizance of persons and things was entirely wanting.

In fact, he did not know his letters, could not read nor write, and the past, as to his life, his acquaintances, and his literary acquirements, all were involved in oblivion. Quinine and strychnine were the remedies relied upon, and now we have the satisfaction of reporting that the past, as to fact and as to intellectual acquirements, is entirely restored, and it would be difficult to find a young man of his years more intelligent, and with stronger moral perceptions than our patient.

ACTION OF OPIUM ON THE GENITO-URINARY ORGANS.

In our *Summary* of last week we referred to the opinions of Dr. Woodward, in regard to the action of opium upon the urinary and genital organs. In the *Boston Medical and Surgical Journal* for October 17th, Dr. George B. Willson, of Port Huron, Michigan, has an article upon the same subject.

With Dr. Woodward, Dr. Willson regards opium as one of our most efficient diuretics. In regard to its mode of action, he says: "It acts upon the kidneys as a direct irritant, and thus stimulates them to increased secretion of water simply; just as iodine, bromine, digitalis, and the like act." Dr. Willson also regards opium as a decided anaphrodisiac. He further attributes to it a property that we never saw previously ascribed to it. He says it is an *abortifacient*, if we but know how to use it. He, however, does not

tell us how to use it, to secure this result. There are some conditions of labor where it evidently acts as a parturifacient; but that it can be used as an efficient abortifacient, we are inclined to doubt.

MURIATED TINCTURE OF IRON A PROPHYLACTIC OF ERYSIPELAS.

In the *Chicago Medical Examiner* for October, Prof. E. Andrews has a lecture upon hospital gangrene and erysipelas, in which the following language occurs in regard to the prophylactic power of the muriated tincture of iron:—

"In civil surgery, I have made extensive use, for three years, of muriated tincture of iron as a prophylactic. Having observed the powerful effect of this remedy in cutting short the disease after it has commenced, it occurred to me to use it in advance to prevent the attack. I have therefore given it with this view, after all my cutting operations, both in the hospital and in private practice, and the result is, that since I have commenced this precaution, no patient of mine has died of phlebitis, pyæmia, nor any other form of traumatic erysipelas. I cannot but think, therefore, that the adoption of the same plan would greatly reduce the mortality in military hospitals."

In regard to the curative action of the remedy, he makes another practical remark worthy of mention here. In erysipelas he thinks there is a morbid alkalinity of the fluids of the body, besides a specific poison circulating in the same:—

"The perchloride of iron acts directly, I think, upon both conditions. It rapidly neutralizes the alkalies and induces a plastic diathesis, and the chlorine destroys the organic poison. In order to get this decisive influence, it is not enough to give ten or fifteen drops of the tincture a few times a day. *Twenty or thirty drops must be given every hour or two, until the effect is produced.*

MILK-SICKNESS.

The cause of milk-sickness is a vexatious, and, perhaps, still an unsettled question. Milk-sickness in the human species, as is well known, is produced by the use of milk obtained from cows suffering from a peculiar poison or disease; what that poison is, is not easily determined, and there seems to be a diversity of opinion in regard to the matter. Some have supposed the disease from which the animals suffer is identical in cause with that which produces malarial fevers in the human species. Others have supposed that the animal was poisoned by eating the *rhiz toxicodendron*.

Others that the waters which the animals drank were poisoned by some mineral poison. Still others—and to that opinion we were disposed to be inclined, from the experiments made by Dr. J. E. Nagle, as reported in the *Nashville Jour. of Med. and Surg.* for October, 1859—that it was produced by the animals eating fungus or ergotized grass. In the *Chicago Medical Examiner* for October, Mr. George Fisher has an article in which he expresses the opinion that the causative poison is *cicuta*. He says he has visited many localities where the disease appeared, and in all cases, he says—

"I found springs running over large pieces of wild, uncultivated land, producing swamp and damp ground. On this wet land, little else grew but the *cicuta*. The *cicuta* has large, fleshy roots, from which the stem is easily detached; the cattle, in dry times, resort to these springs for drink, and tramp off the roots, which decay, and impart their poisoning substance to the water; the impressions made by the cattle's feet, in the wet land, become filled with water, and they drink this water, saturated with the decomposed *cicuta* roots; death or disease of some kind must inevitably follow." * * * "I have seen, in swampy and wet places, large quantities of detached roots of the *cicuta*, in every stage of decay; the water colored by the decomposed roots, and this water was drank by the cattle. In all places where I found *cicuta* in this condition, milk-sickness prevailed."

ANÆSTHETICS—SULPHURIC ETHER.

In late numbers of our *Summary*, we have made frequent reference to *kerosolene* as an anæsthetic, chloroform, etc. The subject of anæsthetics has, of late, been attracting considerable attention, and we shall continue to keep our readers posted in all new developments and opinions upon this all-important subject.

Before the Boston Society for Medical Improvement, a report was made upon *ether*, by a committee composed of the following named gentlemen, viz., Drs. R. M. Hodges, George Hayward, S. D. Townsend, C. T. Jackson, and J. Baxter Upham. Their report is published in the *Boston Med. and Surg. Journal* for October 24th. We shall make a very condensed statement of a few of their opinions. It is well known that the physicians of Boston have ever been partial to sulphuric ether, and give it preference over the other anæsthetics. The committee take it upon themselves to prove that "sulphuric ether is, of all anæsthetic agents, alone worthy of unlimited confidence." After a careful examination

of the medical journals, the committee find forty-one cases in which death has been ascribed to sulphuric ether. These cases are thoroughly sifted, perhaps justly, upon the principles of exclusion, until not a case is left, and the committee then affirm "that their careful search of journals and monographs furnishes not a single conclusive case of death from the proper inhalation of pure sulphuric ether." If the *reputed* deaths from *chloroform* were as thoroughly sifted, and with the same seeming intent to effect total exclusion, the nearly two hundred deaths attributed to chloroform possibly might be diminished in number. "Conclusive case," "proper inhalation," and "pure sulphuric ether," or other agents are qualifications that will admit of considerable latitude as to results.

From our reading and observation, we should think, in this country at least, chloroform was given by inhalation *ten times* where sulphuric ether was *once*. Certain are we, that we never thus used the ether more than four or five times. In thirteen years, in all our other cases, where an anæsthetic was desired, chloroform has been used. Besides, we have probably used it more than one hundred times in *convulsions*. As yet, we have never seen any bad results, nor failed to get the desired result, which last, we certainly have with sulphuric ether. If it should be true that, taking the world over, chloroform was administered by inhalation ten times where ether was once, and there has been forty-one deaths attributed to the latter, and less than two hundred to the former, then the *ratio* of attributed deaths are *against* the sulphuric ether.

In making this supposition, we do not wish to be understood as questioning the correctness of the committee's statement, that no death has probably resulted from the proper inhalation of pure sulphuric ether; neither do we wish to be understood as claiming exemption from danger in the inhalation of chloroform. What we would infer is, that with the same precautions as to purity with each—the same understanding in regard to the proper method and precautions of administration respectively—with the same number of cases, and the same profundity of anæsthetic impression in the respective use, might not give such widely different results as some suppose. The conditions and precautions of administration with the two agents are slightly dissimilar—chloroform, being a decided sedative, should in all cases be *preceded by the administration*

of an alcoholic stimulant. Sulphuric ether, being in its action a stimulant, does not require this precaution. But we have been led away from the paper before us, and will now return. The committee say:—

"The *safe* inhalation of ether requires proper attention—first, to the quality of the article used; second, to the method of administration; third, to the symptoms which present themselves while the patient is under its influence."

Thus it will be seen that even ether requires caution. As it is not difficult to get the sulphuric ether in purity, we shall only refer to the method of administering. The committee say:—

"Ether should never be given from an inhaling apparatus. The best medium of its administration is a bell-shaped sponge, large enough to cover in the nose, mouth, and chin; but it is difficult to find one of sufficient size and close enough in texture, or without such numerous apertures at the root as to admit too freely the atmospheric air. A sponge of this sort, moreover, being as expensive as rare, is seldom used outside of hospitals. A stiff towel, properly folded, may be substituted, and has the advantage of being always at hand; as it may be left behind, the surgeon does not carry away with him the annoying odor of an impregnated sponge. It is desirable that the towel should be a new one, and of pretty good size. It is to be taken just as it comes from the laundry, and not unfolded further than to display it in the dimensions of about ten inches by five; by folding down two of the corners in such a way that they shall lap over each other a little, and securing them by stout pins, a cone will be made which fits the face admirably. The thick layers of toweling will hold sufficient ether, and its texture prevent a too free dilution of the anæsthetic by atmospheric air, provided the apex and seam of the cone are carefully and tightly closed, either by pins or the fingers. As the cone becomes collapsed by saturation, it should from time to time be opened and kept in shape by distending it with the hand." * * * "Ether should be poured lavishly on the towel or sponge, an ounce or two at a time, especially at the commencement of inhalation."

The committee advise that the pulse be watched through the whole process of etherization.

"The best test of complete etherization is the snoring of the patient; and no operation, unless slight, should be undertaken until this symptom presents itself."

This is not always necessary in the use of chloroform. To-day we performed an operation of great painfulness, requiring not more than half a minute for its accomplishment. The patient was a young lady of about eighteen years, and very nervous. We let her inhale chloroform,

not to complete insensibility—in fact she seemed quite rational. She said she felt no pain, though she was frightened, she said, at watching our movements, knowing what was to be done, and fearing pain. Though cognizance of facts was present, cognizance of pain was gone. Such a fact as this has an important medico-legal bearing upon such cases as that of Dr. Beale and others.

The committee claim that sulphuric ether can

"Be administered to persons of all ages, from the new-born infant to the octogenarian. In weak, strumous children, and in old persons where there are reasons for suspecting fatty degeneration of the heart, it should be used with caution."

The committee say that there are but two arguments urged in favor of chloroform over sulphuric ether, viz., it has a *more agreeable odor*, and is more rapid in its action. The committee attempt to prove that the *effects* of the sulphuric ether are *more agreeable* than those produced by chloroform, and that, if the first odor of chloroform is the more agreeable, the secondary sensation of this kind is that of an extremely "nauseating and sickish-sweet odor." As regards the rapidity of action, the committee say that

"A patient may be put by *ether* into a thorough anæsthetic condition for the performance of a by no means short or trivial operation in one minute and a third. Chloroform can hardly do more than that."

The committee's conclusions are summed up in six distinct propositions. As the substance of the first four are already given, we subjoin the last two, viz. :—

5th. "In view of all these facts, the use of ether in armies, to the extent which its bulk will permit, ought to be obligatory, at least in a moral point of view.

"6th. The advantages of chloroform are exclusively those of convenience. Its dangers are not averted by its admixture with sulphuric ether *in any proportions*. The combination of these two agents cannot be too strongly denounced as a treacherous and dangerous compound. Chloric ether, being a solution of chloroform in alcohol, merits the same condemnation."

It is but just to observe that to this last conclusion Dr. C. T. Jackson demurs.

"He believes that a mixture of four measures of ether and one measure of chloroform may be employed without danger, or with very little danger, and that the risks from chloroform are diminished more than four-fifths by this combination."

The above is the substance of the *twenty-six* printed pages of which the report consists.

THE EFFECT OF HEAT ON VACCINATION.

In the *Lancet and Observer* for October, Dr. C. A. Hartman, of Cleveland, Ohio, puts the following inquiry :—

"As far as my own experience goes, as well as that of some professional friends, hot weather destroys the effect of vaccine virus to such an extent as to render vaccination during the months of July and August entirely valueless. With the best virus, and the most approved method of operation, we find it impossible to more than start the pustules, which invariably dry off and disappear by the fifth or seventh day after vaccination, leaving no mark beyond that of the incision or puncture. Sometimes this happens in June or May, if the temperature rises considerably in those months. Have not others made similar observations? If so, it would be important to know it, as it would be a valuable hint as to the best season for vaccination."

REVIEWS AND BOOK NOTICES.

Report of a Committee appointed by the Sanitary Commission to prepare a paper on the value of Vaccination in Armies.

The committee, both of whom are Philadelphians, have grouped together in a brief space some valuable statistical information upon the important subject of vaccination in armies, and in so doing have done a service to the profession generally. The conclusions at which they arrive are: that vaccination is a positive protection against small-pox within certain limits; that there is a period of life when that influence declines, and hence the importance and necessity of reprotecting the system by revaccination.

Our own conclusions, based on good opportunities for study and observation, are, that vaccination is a positive and unlimited protection against small-pox, quite as much so as the disease itself is against a recurrent attack—*when the operation is properly performed*. The reason why "revaccinations" so often prove effectual, we believe exists in the fact that the vaccination was not properly performed in the first instance. If the system is insufficiently protected by a half-performed operation, revaccination will produce a *vaccinoid*, not a true vaccine disease; and the person thus imperfectly protected is liable to, not variola, but *varioid*, a disease of very little consequence, as regards mortality, when compared with the former. If there is a period of life when the influence of thorough vaccinia declines, then there is a period when the influence of variola declines, and the person is liable to a second attack. It is well known that there are idiosyncrasies of constitution which render their possessor liable to repeated attacks of small-pox, and that the same holds true in regard to others of the exanthematæ.

According to our observation, too, when small-pox prevails epidemically, the vaccine disease is more perfect, and more easily propagated. To our mind, the fact that so many persons who have been vaccinated have variola or varioloid, the vaccine or vaccinoid disease, proves that they were carelessly vaccinated at first, and either not protected at all or but partially protected. In Germany, vaccination is generally more thoroughly performed than in this country; we would be glad to have some statistics of the result of revaccinating the *German* volunteers. It would have an important bearing on this question.

As a manual or "hand-book" for the surgeons of the army, its publication, in our opinion, pays a very equivocal compliment to their intelligence, and forcibly suggests the inquiry whether the money spent in issuing it from the press would not have been much more usefully employed in supplying vaccine virus sufficient to revaccinate all the soldiers in the army, if that be deemed necessary.

A Thesis on Hospital Hygiene, for the Degree of Doctor of Medicine in the University of New York. By VALENTINE MOTT FRANCIS, Member of the New York Historical Society. Printed by permission. New York: 1859, pp. 217.

When the good Dr. Francis, of New York, parted with all earthly things, we felt that it occurred when he could least be spared. He had grown up with the nation; he had witnessed the prosperity of its early years, and had lived to see approaching the dark clouds which were soon to gather around it. It appeared, indeed, that he was part of the happiness of his native land, for as her star began to dim, his disappeared from the constellation where it had been so long admired for its brilliancy and its beauty.

It is a seemly sight to see the son taking up, as it were, the broken thread of the father's life, and giving us some help in these eventful times, pregnant as they are with woe to humanity.

There never has been a time, certainly not on this continent, when the subject of hospital hygiene claimed such careful and earnest attention, and now that the oldest of our States has been converted almost into one vast camp, presenting all the contingencies of wide-spread and potent disease, it is the duty of all who can give any advice on this subject to do so heartily, and urge its importance.

This book of Dr. Francis is replete not only with evidences of a profound and classic knowledge of the subject of which it treats, but with important practical suggestions with reference to the *site, location, architecture, ventilation, and government* of hospitals. Now that the smoke of the first battle, which threw everything military into chaos, has cleared away, we hope to see much improvement in the hospitals about the capital; in the emergency almost any empty building was seized upon, and, without reference

to its adaptedness, converted into a hospital; this at that time was unavoidable, but now, with their able and sufficient corps of surgeons, and with the immense resources at their command, it has become the duty of those having control to see that they are conducted in accordance with the dictates of science and humanity.

The preliminary observations, for the length of which our author makes apology, are to us the most attractive part of the work; here he gives an interesting historical account of the origin and progress of hospitals, and discusses earnestly and feelingly the necessity of treating the poorest and most depraved of patients with the greatest kindness and sympathy.

The pages devoted to the consideration of the *location and government* of hospitals will be found exceedingly instructive, and we recommend them to the attention of our army surgeons, fully believing that if our author's suggestions are observed, they will be productive of much more benefit to the sick and wounded soldiers than all the reports or arrogant pretensions of a mongrel sanitary commission.

Take it "all in all," Dr. Francis' book is a fair offering at the shrine of the goddess Hygeia.

THE MEDICAL AND SURGICAL REPORTER.

PHILADELPHIA, SATURDAY, FEBRUARY 8, 1862.

REMOVAL.—The office of the *REPORTER* has been removed to the N. E. corner of Seventh and Sansom Streets, below Chestnut. Correspondents will be careful to note the change. tf.

MILITARY DRILL—PHYSICAL CULTURE.

Like the hibernating animals which inhabit the regions of perpetual snow and ice upon our northern shore, the military spirit has lain dormant through a long winter of peace and quietude. Years ago the servant of God ministering from the sacred desk laid upon it the hand of mercy, and exorcised in our own land the spirit which would perpetuate strife upon the battle-field. The glare of military parade, the glitter of bayonets, the measured tread of soldiery was nearly forgotten. The sword was rusted in its scabbard or "beat into a plowshare," and the spear had taken up the more serviceable occupation of "a pruning hook." But the spirit would not stay thus exorcised. It has broken the chains which bound it in its days of hibernation, and we now see it cropping out everywhere all over our land. The military spirit is most thoroughly aroused. From young America just toddling from its swaddling clothes, to the gray-

haired veteran of fourscore years, through all the intermediate stages of life, we witness an ardent desire to seek for glory at the cannon's mouth. It pervades all classes and ages without distinction. Go where we may—into the family circle, amid the retirements and privacy of the family hearthstone, into the highways and byways of the country, or the streets, lanes, and avenues of the city, into the public assembly convened for whatever object and on whatever occasion, into the shops, places of public resort for amusement or news, everywhere, emblazoned on every countenance and upon every object around, we observe unmistakable indications that the military spirit is to a large extent absorbing the energies of the people. Samson has grown restive under the green withs that bound him, and they have become as tow in his hands.

Now what is to be the result of all this? To say nothing of its effect, present or future, upon the *morals* of the people, (a theme which, as medical journalists, we have no disposition to discuss,) what will be the result as it regards the health and physical energies of the generation now upon the stage of action, and what upon those who are soon to take their part in the great drama of life? Is it to lead to the introduction of military tactics into our schools as a branch of education? Such an idea has been suggested, and if it be carried into operation we have no doubt the most beneficial results will follow to the physical system of the student. It will give vitality and energy to the brain and nervous system; enlarge, expand, and strengthen the chest, making room for a full expansion of the air-cells of the lungs; it will produce a healthy tone and action of the stomach, and remedy the dyspeptic symptoms so common among students. It will give a healthy glow to the countenance, and impart to it freshness and vigor. The enthusiasm attendant upon it will impart energy to the entire system, the form will become erect—the position designed for it by the God of nature—and the muscles of the whole body will be developed in harmony. How many pale, wan, waxy, stooping, listless, drooping forms of humanity do we now see in our schools, that just drag their enervated bodies about! How would their steps be quickened, how much more freely and vigorously would the blood circulate through the veins, and how speedily would their listlessness disappear under the endless variety

of evolutions of military drill! And with how much zest would they return to their studies after such an exercise! The entire muscular system is here brought into play; the limbs are thrown into all possible positions. In walking, one set of muscles is brought into action, while the others are comparatively quiet; so also in riding or in any of the athletic games; but in developing the whole system, in giving free exercise to all its parts so as to preserve a sound and healthy body in harmony with the laws of nature, which always seeks uniformity and symmetry in her operations, the military drill is beyond comparison the best. However much, therefore, the introduction into the school of the military *spirit* might be detrimental to its interests (as it no doubt would be) as tending to foster a belligerent spirit in the pupil, the military drill would promote the vigor both of his intellectual and physical organization, and, if properly enforced, would teach him to be an obedient citizen of the commonwealth.

But it should be introduced, if at all, under the direction of a competent teacher, one who is thoroughly acquainted with the structure and functions of the body as well as familiar with the laws of hygiene; and it should be made a part of the regular system of instruction. It should not be introduced merely as a pastime, which it would very likely become if incompetent instructors were employed, but incorporated into the regular routine of studies and stamped with the same importance as any other branch. In the military academies and colleges of our land this feature of instruction has long been made prominent, and the result is that the military cadet is remarkably free from all those ailments which are common to student life, and exhibits a freshness of countenance, and vigor of the physical system, which attract the attention of the most casual observer. Should the same rigidity of military drill and discipline be introduced into our schools generally, the same results would still follow, and instead of the puny, sickly specimens of humanity, scarcely able from inanition to drag their pedal extremities after them, and that need a machine to enable them to draw in and force out the air necessary to keep their blood from utter devitalization, we should have a race of strong, vigorous, athletic children, youth, and men; and as physically, so also mentally, the same results would ensue.

While, therefore, the military spirit so thor-

oughly pervades the great mass of the people, we would rejoice if its drill and discipline were as thoroughly and as extensively practiced that, while as a nation we are improving in military prowess, our children may also make rapid progress physically as well as mentally.

EDITORIAL NOTES AND COMMENTS.

Couches for the Hospitals.—Among the many conveniences provided for the accommodation and comfort of the sick and wounded soldier in the hospitals at Washington, we learn that Surgeon-General Finlay has provided a newly-invented spring couch, which is intended to take the place of the old-fashioned cot or bedstead. This new bed is equally adapted to camps and hospitals, and can be taken apart and tied up almost in a man's handkerchief. The bottom is made of thin slats of pine of the smoothest quality, which are provided with elastic springs of finely-tempered metal, which yield comfortably to the pressure of the recumbent body. They require only a very light mattress, weighing four pounds; thus dispensing with the heavy straw or hair mattress—generators of malaria or fever—and giving besides a much more comfortable bed to the soldier. This is provided by the medical bureau of the army, and is only one of the many articles of comfort which that department, in its quiet and unostentatious manner, is furnishing the hospitals. The staff cannot find time, from its unwearied labors for the welfare of the vast army now in the field, to publish pamphlets extolling itself for performing its duty. It quietly does its appropriate work, and reports only to the heads of the government. And yet we candidly think that, in this particular crisis, the people should know what is being done by the medical staff for the health of the troops.

Military Hospitals at Augusta, Maine.—From the report of the committee appointed by the Maine Legislature to investigate the condition and management of the hospitals in Augusta, we gather the following facts: At their first visit to the Winthrop Hall Hospital they found it crowded to its utmost capacity with sick and disabled soldiers, the buildings exceedingly filthy and poorly ventilated; two hundred and twenty men were inmates of the hospital, and were suffering from foul air, want of proper nursing, and

neglect of hygiene. Subsequently they found it in better condition, well provided with beds and bedding, and the patients with suitable change of clothing, with good medical attendance and conveniences, under the superintendence of Dr. Buxten. The other hospitals were found to be in good condition, under the direction of Drs. Bates and Gordon, and Surgeons Donnell and Kimball, Adams and Westcott. A total of 837 were reported sick in the several regiments and batteries.

Completed.—The series of articles which was commenced in the columns of this journal in May last, entitled "*Hints and Observations on Military Hygiene*," etc. is concluded in the present number. These articles have been received with great favor by the profession generally, and have been extensively copied into other medical journals. A great amount of research and labor has been expended upon them, and their author is deserving of credit for the concise yet comprehensive manner in which he has presented the subjects treated. They are now republished in pamphlet form, and as a monograph upon medical and surgical diseases in the army, and the best means of preventing and curing them, will be of great value. Their author, it gives us pleasure to announce, is LAURENCE TURNBULL, M.D., one of the surgeons of the Howard Hospital of this city.

Board of Health in New York.—The following is a synopsis of the bill introduced into the Legislature of New York by Mr. Coddington, in relation to the public health of New York:—

The bill creates a Board of Health, consisting of the Health Officer General, the State Health Officer, the Chairman of Public Charities and Corrections, the Presidents of the Commissioners of Emigration and of the Public Dispensaries, and three Physicians, to be chosen by the Boards of Trustees of the said Dispensaries. The term of office of the physicians to be determined by lot, and one to go out of office each first of January, and a successor to be appointed by the Boards annually, to hold office three years. The Board of Health to organize on the first Monday of May next. The Secretary and Treasurer to receive not exceeding \$500 yearly salary. The Board to meet at least once in each month, and to be provided with accommodations and supplies by the Common Council. All powers and duties pertaining to the public health are vested in the Board, who have authority to create and amend laws and regulations, and to impose fines and penalties. The Supervisors are required to pro-

vide money to meet the expenses of the Board, and in case of emergency to raise a loan such as the Board shall certify to be necessary. The Board shall appoint thirty-six District Health Wardens, from the Visiting Physicians of the dispensaries, who shall receive \$3 a day for their services, and report the sanitary condition of their districts each day to the Health Officer, and perform such other duties as the Health Officer General, or Board, may direct. The office of Health Officer General is created by the bill, to be appointed by the Mayor of New York, for three years. He shall be Head of a Health Department, to which shall be attached three Bureaus—Sanitary Inspection, Records and Statistics, and Markets. The organization, powers, and duties, mode of appointment and compensation of the officers of the Department, to be the same as in the present City Inspector's Department, subject to such changes as the Common Council may by ordinance direct. The Health Officer General to execute all orders and instructions of the Board of Health, to see to the enforcement of all ordinances, and to make monthly reports to the Board, and yearly reports to the Common Council. The City Inspector to perform the duties of the office until a Health Officer General is appointed.

Report of the Surgeon-General of Pennsylvania.—From this report, a copy of which has just come to hand, we learn that the hospital department of Pennsylvania is in good condition, thoroughly organized and efficient. Of 305 candidates who presented themselves for examination for the posts of surgeon and assistant surgeon, since May 15th, 91 have been recommended as surgeons, and 144 as assistant surgeons, the balance having been rejected for incompetency or having withdrawn. Ten surgeons and two assistant surgeons have since been examined by the United States Board of Army Surgeons and promoted to the posts of brigade surgeons; seven surgeons and twelve assistant surgeons have resigned; and one assistant surgeon has been killed in action.

In addition to the examination, organization, and discipline of the medical staff of the State, the hospital department has closely supervised all sanitary measures connected with the welfare of the troops. Hospitals were built at Camp Wright, near Pittsburg, Camp Curtin, Harrisburg, Camp Washington, Easton, and Camp Wayne, at West Chester, and furnished with all that was requisite for the comfort and welfare of the sick soldiers. Active steps were early taken to secure the troops against the small-pox.

"Of the reserve corps nearly 12,000 were vac-

inated or revaccinated, and all subsequent levies of troops have been similarly cared for. Although the sudden departure of regiments for the field has prevented accurate returns from the regimental medical officers, it is believed that at least 30,000 men have been carefully protected from this loathsome disorder.

"Special hygienic measures were also taken to preserve them from camp epidemics, as measles, dysentery, and typhoid fever, the camps having been generally healthy, the proportion of sick to the number of troops in camp having rarely exceeded one in the hundred, and seldom reached that ratio, except during the prevalence of diarrhoea.

"The department has also provided every regimental surgeon with a full set of surgical instruments of the best quality, together with medicine chests, hospital knapsacks, hospital mess chests, ambulances, and surgical books likely to be required for reference or study; the supply of each corresponding with that furnished regular troops by the United States Government. In all pertaining to its medical organization the condition of the Pennsylvania volunteers is, it is believed, as perfect as that of the regular army, the best nurses and attendants having been alone taken from the ranks of the troops, or specially enlisted for this purpose."

Medical Society of New York.—This body commenced its sessions on Tuesday of this week, at Albany, Dr. E. H. Parker, of Poughkeepsie, presiding.

"On Wednesday, a very able and interesting paper was read by Dr. Swinburne, of Albany, embracing the evidence in the case of the death of Mrs. Rudge, taking the position that her death was not a suicidal act, but that the wound in the throat must have been inflicted by another person after death. The paper was illustrated by cuts and models, showing the theory of the manner of her death.

"A resolution was adopted declaring against the introduction of the homœopathic practice in any portion of the army.

"A resolution to amend the Code of Ethics, by striking out that part which forbids patenting surgical instruments, was laid upon the table."

Hippophagy is still being agitated by the French. A feast was recently given in Algiers, which was participated in by the high public functionaries, and other eminent persons, at which horseflesh was served up in elegant style. The object of the entertainment was to combat, by example, the popular prejudice against such food. As it is asserted that the skill of French cooks is capable of making anything palatable, even, it is claimed, to produce a delicate dish out of an old pair of boots, we do not doubt that the flesh of worn-out horses may be made eatable.

Correspondence.

BELLADONNA IN DIPHTHERIA.

Circleville, Ohio, Dec. 30, 1861.

MESSES. EDITORS:—Our friend Dr. Gibbs has seemingly endeavored, by commenting on and re-duplicating an extract from an article furnished by me to the *St. Louis Journal*, to give either the extract or its author an unexpected notoriety.

In your's for the 14th of December, he brings forward again said extract, and calls in Dr. White by way of rejoinder; and we wish to know, under the circumstances, if Dr. Gibbs is "*satisfied*." He gave at once his qualified condemnation of our suggestions, the results of which we claimed only as inferential evidence, and now insist are not refuted by any single test, conducted in the manner related by Dr. Gibbs, nor by the assumed "*dissolution of the blood*" pathology of Dr. White.

Dr. Gibbs says, when our article came to hand, he had "*four* very bad cases of diphtheria under treatment. One on the first day, and three on the third of the disease, though well advanced and terribly severe. The belladonna was at once put on trial, though our *other remedies* were not at all interrupted. *Two* cases died and *one* recovered. In the case in the first stage, it produced head symptoms that so alarmed the *friends* that we discontinued it."

This experience, if not creditable to the drug, is alike discreditable to the "*drugger*." Since which, Dr. Gibbs informs us, he has not "*resorted further to the remedy*;" but endeavors to settle the question by Dr. White, who (knowing little or nothing of belladonna as a curative agent in disease, and assigning as an apology for this want of information that the remedy was brought into notice by an empiric,) is equally ready to condemn its administration, especially in a disease "*characterized by exudation growing out of a dissolution of the blood*." In such, says Dr. White, all sedatives are *injurious*.

Merely for the benefit of our friend Dr. Gibbs, who says he cannot speak favorably of the remedy, and Dr. White, who, with less experience, pronounces its administration "*irrational empiricism*," we wish to know if medical science is at present resting upon "*irrational and dogmatic assumption*"?

How does Dr. White know exudation is dependent upon a "*dissolution of the blood*"? What

constitutes a dissolution of the blood? Are *all* sedatives injurious? Has Dr. White tried them *all*? Have sedatives no curative agency in disease, excepting their narcotic impression? What are we to understand by the much-harped-upon "*blood disease*"? A change of polarity—a fermentation—a poison in and independent of the circulation, or what?

To pronounce diphtheria, in a loose manner, a blood disease—a dissolution of the blood—can form no philosophical deductions for treatment; *not even with alteratives*.

Many questions might be asked; but until some learned *Æsculapius*, gifted with all the graces in predetermining therapeutics and pharmacy for the profession—condemning this and lauding that—working the whole problem by means of a mental crucible and spectral patient—can tell us why one narcotic counteracts or destroys the poisonous effects of another, and why castor oil produces catharsis, we will rest easy, believing there are more things mysterious on earth and in medicine than were ever dreamed of in their philosophy. Give us your *experience*, gentlemen. One fact, founded upon such, however humble, is worth more than a volume of theories.

The so-called "*science*" of medicine is of necessity a bundle of "*irrational empiricisms*."

Our knowledge comes not from any course of reasoning, by which we are enabled to determine beforehand the effects of any remedy in disease. And our pathology may be corrected many times by the manifestations of the drug; but the medicinal agent will never yield its allegiance to our ethereal pathology.

But enough of this. Counter to the expressions of Drs. Gibbs and White, I can say that, with additional experience, I have no reason to change the views heretofore expressed.

N. E. JONES.

DIPHTHERIA; ITS NATURE AND TREATMENT.

LANCASTER, OHIO, JAN. 28, 1862.

I am certain that any remedy employed in this disease by the physician, that will not tend to aid nature in expelling such impurities as might impede her ingenious efforts, would, according to the common acceptance of the adage, be locking the door and leaving the rogue within. On those patients whom I have treated for diphtheria, an efflorescence invariably showed itself about the fifth day, most commonly on their epigastrium

and along the sternum and trachea. This eruption infallibly denotes the approach of a favorable crisis. I have witnessed some that were unsuccessfully treated, who, during their illness, did not exhibit any of this efflorescence; but scarcely was the vital spark extinguished, when a profuse eruption made its appearance on various portions of the body, of a confluent nature, exhibiting a dark, purple hue, and yielding a fetid odor. Those symptoms induce me to think that diphtheria is an eruptive fever, something analogous to that of erysipelas. I am certain that both of these diseases are made manifest by the action of malaria on the impurities of the general system.

The following are among the remedies I use:—

R.—Calcedined magnesia, 3iij;
Syrup of saffron, f3ss;
Simple syrup, f3ij;
Oil of peppermint, 5 drops. Mix.

A tablespoonful to be taken every hour until it affects the bowels.

R.—Cochineal and saffron, each 3ss.

To be properly triturated in a mortar and dissolved in two ounces of boiling water. Then add half a drachm of quinine, one drachm of tinct. hyoscyamus, two grains of iodine, two grains iodide of potassium, and two ounces of simple syrup.

A teaspoonful to be taken four times a day.

R.—Iodide of potassium,
Iodine, of each grs. iv;
Tinct. hyoscyamus, f3ij;
Rain water, 2 ounces. Mix.

This to be used as a gargle four times a day, as long as any trace of the disease remains.

When the patient becomes convalescent, he should take a wineglassful of the compound decoction of sarsaparilla (U. S. P.) three times a day, for at least twelve days, with the addition of one ounce of lime-water to each pint of the decoction.

EDWARD LYNCH.

MEDDLESOME MIDWIFERY—INVERSION OF THE UTERUS—FATAL TERMINATION.

East Fairfield, Ohio, Jan. 25, 1862.

MESSES. EDITORS:—I take occasion to present you with a brief account of a case of inversion of the uterus. On the 21st inst., I was called to see Mrs. S. After riding a distance of four miles, I arrived at her bedside. Found her pale, pulseless, speechless, bedewed with a clammy sweat, and dangerously exhausted from excessive hemor-

rhage. The midwife, who had been employed to attend her in her confinement—an old woman, who tells her neighbors that she has had a regular training in the art of midwifery, and that she has "stuff" to rub on the hypogastrium to prevent after-pains, etc.—informed me that the after-birth was very large, and that she could not get it away. On examination, I found the womb inverted and protruding entirely outside of the genitals, with the placenta partly adherent to its fundus. Although I considered her in articulo-mortis, I deemed it proper to return the uterus to its natural position, that she might be decently interred. The placenta was detached from the fundus with but little trouble. The womb being very flaccid was readily replaced, without causing the patient any pain, by indenting the fundus with the thumb, and carrying it within the os with the back of the index and middle fingers. The lady expired soon after the operation. The inversion, I believe, was caused by the midwife making traction on the cord while the uterus was in a relaxed state. She had also made desperate efforts to remove the whole mass. Comment is unnecessary.

C. KAY, M.D.

ARMY CORRESPONDENCE.

A correspondent at Rolla, Missouri, gives the following intelligence relative to the sanitary condition of the troops in that vicinity. He says:—

"Ten per cent. of the entire army are on the sick list. The prevailing diseases are measles, typhoid fever, army dysentery, and pneumonia. In two of the regiments small-pox has broken out, but as yet the cases are few. The mortality is very great; prostrating and fatal diseases are so prevalent that the subject should receive prompt and thorough official investigation."

The writer argues that climate will not account for this very great amount of sickness among the troops. Arkansas and Missouri soldiers suffer more than those from Northern Illinois and Iowa. There is also a marked disparity, too, in regiments encamped side by side. Among the causes for this alarming mortality, he mentions the following, and his views are so candidly stated that we give them in full:—

"I. Lack of sanitary precautions. Camp life, under proper conditions, is the healthiest life in the world; but in this climate, if those conditions are neglected, death reaps a fearful harvest. Among the comforts and conveniences of home it is comparatively easy to obey the laws of health, in cleanliness of person and dress, and

correct diet; but in camp, soldiers will not do it, unless it is insisted upon and made the object of unremitting personal attention by their officers. At this post, for instance, while there have been upward of a hundred deaths in the 35th Illinois, the 2d Missouri (Colonel Schœffer) has lost only four men by disease since it entered the service, shortly after the war broke out. This regiment is composed exclusively of Germans, who show, as a class, much less mortality than our troops of native birth; but Colonel Schœffer is an old soldier, who enforces the observation of hygienic laws, and his hospital is in a better condition than any other in the entire command. The 13th Illinois (Colonel J. B. Wyman,) which is one of the best regiments in the country, composed of intelligent men, who have gone through much hard service, was mentioned to me as another fortunate command, which had lost only 16 members. A visit to its camp explained the cause. The location is high and dry; the men are all provided with Fremont tents, properly warmed and ventilated, and their quarters are dry, clean, and tidy. All their garments are washed at least once a week, and cleanliness of person and the proper preparation of food is rigidly enforced. If the officers of other regiments exercised the same care in these respects as Colonel Wyman and his subordinates, the results would be most happy. On the other hand, we found the men of the regiments which are suffering the most, wallowing in mud up to their ankles, and their quarters often in a condition which rendered the prevalence of typhoid fever and small-pox of easy explanation. The 4th Iowa, which has suffered severely, having buried 52 men within a short time, should be excepted from this category. It comes from a sparsely-settled region, and when measles broke out among the men there were upward of 400 cases within a month. The disease left the systems debilitated, and in many instances slight imprudence, in going out too soon in the raw, damp air, brought on pneumonia, which soon proved fatal.

"II. Lack of proper medical attendance and supplies. The commander of a division said to me: 'I needed and applied for five surgeons, but have been able to obtain only one; and it is utterly impossible for him to give my men the attention they require.' The colonel of one of the regiments, which has a very large sick list, remarked: 'Red tape, or incompetency, or both, is killing my men. It is impossible to obtain proper medicines in adequate quantities. When we require, and ask for expectorants, we receive a little of what we need, and a great deal of calomel, or something else which we do not need.' The surgeon of the post hospitals complained in the same strain, that he found it impossible to obtain from the head of the medical department in St. Louis, articles imperatively needed by his patients. So far as bedding and clothing are concerned, there seems to be no lack; but in medicines, there is great cause for complaint.

"III. Inaction. This has proved most inju-

rious to the health of the troops. Accustomed to active lives, when they are shut up in their camps month after month, with no excitement, no stimulus to exertion, nothing to fill up the vacant hours but the tiresome routine of their light daily duties, they become careless, listless, and, after they get into the hospitals, often hopeless. But let an order for marching be given, when there is the slightest prospect for meeting the enemy, and they receive it with deafening cheers; their eyes light up with new enthusiasm; the patients in the hospitals leave their cots, inspired with fresh life, and the sick-list decreases marvelously. All the officers unite in testifying that the health of their men is much better in active service than in the lethargy of the posts."

These remarks, it will be observed, have reference to the post hospitals in the vicinity of Rolla. The want of surgeons is a matter which is not satisfactorily explained. Each regiment has, we suppose, a surgeon and an assistant-surgeon, and each division has additional surgeons. Either the statement of the lack of medical force must be exaggerated, therefore, or a much larger number of the troops must be on the sick list than are reported. We think the writer must have been misinformed. But he adds:—

"Contrary to the general impression, we found the condition of the regimental hospitals better than that of the post hospitals. The atmosphere is much less foul, the accommodations at least equally good, and soldiers there are surrounded by their own comrades, instead of strangers. Colonel Schœffer's, and one or two other regimental hospitals, are warmed by a fire in a trench under the ground, covered with turf, rendering their atmosphere infinitely more wholesome and pleasant than the foul air of the crowded post hospitals."

Another correspondent from Camp Griffin, Va., the camp of the Vermont Brigade, says:—

"This regiment appears quite healthy as compared with the other regiments composing the Vermont Brigade, having at the present time not over twenty in hospital. The 4th, 5th, and 6th Regiments still suffer severely from sickness. In the twenty-four hours I spent at Camp Griffin, four deaths occurred in the 4th Regiment and one in the 5th. I was not at all surprised to find that the 5th had about one hundred and fifty in hospital, considering that they are encamped on the side of a small hill where the ground, so I am informed, is generally exceedingly damp. I found it rather a difficult and laborious undertaking to get about the camps, seeing that the mud is ankle deep, and also taking into consideration that it is the nastiest and most infernal mud that could be contrived or imagined. The whole army of the Potomac may be now said to be encamped in an ocean of mud."

Two-wheeled Ambulances.—Dr. Geo. B. Wilson, Assistant Surgeon of the 3d Michigan infantry, located at Camp Michigan, Virginia, takes exceptions to the two-wheeled ambulance recommended by the medical department of the army as "the best for the dangerously sick and dangerously wounded." He states as his "candid opinion, that not only is the *four-wheeled* vehicle preferable, but that he would consider the conveyance of dangerously wounded men in the two-wheeled carriage *exceedingly dangerous*." He gives this opinion after having tested the two carriages by actual experiment and experience. In relation to disease in his camp, he writes as follows to the *Boston Medical and Surgical Journal*:—

"Since winter came in, we have had a greater variety of diseases. Pneumonia began to show itself some three weeks ago in other regiments about us. With us, it began only a week ago; or, I may say, it is now commencing, as it appears to be on the increase. We have had a few surgical operations—the extraction of a few balls, some of them the result of accident, and a few received in skirmishes. I do not want to waste your paper with detailed accounts of such wounds. I hope you do not expect that every gunshot wound is worth reporting. I have seen only four since I wrote: one of the finger; one of the wrist; one of the face, the ball entering a little above and outside the angle of the mouth and passing out behind the sterno-mastoid in the back part of the side of the neck. The course was a dangerous one, but no serious harm was done, and nothing was to be learned. In another case, a ball entered near the middle of the rectus femoris—a little above the middle—and was found just in front of the adductor magnus, four or five inches below the ischium, under the skin. It was cut out easily, and no trouble.

"A few weeks ago we had some cases of diphtheria, but they were slight. Several cases of otalgia, terminating in otitis and suppuration, began early in December, and kept coming for some two weeks. Now coughs, colds, diarrhoea, and dysentery, with a good deal of rheumatic pains, are the complaints.

"Our hospitals have been a matter of great interest to the government, the Sanitary Commission, and every one concerned. Fortunately, we have hit on a good plan, and the medical inspectors have told us that we have the best field hospital in the army of the Potomac. Ere long I will give you an outline of it, if I see that it may help others hereafter. At present it is too late for change, and it would not be worth while to burden your pages with useless matter.

"During the months of October, November, and December, the cases of all kinds (no matter how slight, if they were excused from duty,) occurring in the four regiments of this brigade,

were thus: Michigan 2d, 1187; 3d, 756; 5th, 816; New York 37th, 853. The leading diseases were: Acute rheumatism, 101; chronic rheumatism, 24; intermittent quotidian fever, 207; intermittent tertian fever, 295; continued fever, 89; remittent fever, 75; typhoid fever, 144; constipation, 221; acute diarrhoea, 573; acute dysentery, 63; acute bronchitis, 132; catarrh, 709. Discharged, 124; died, 14.

"The mean strength of the regiments is as follows:—Michigan 2d, 927; 3d, 917; 5th, 923; New York 37th, 729. There are only eight companies in this last regiment, two being detached."

NEWS AND MISCELLANY.

Dr. Henry Hartshorne, late Professor of Practice of Medicine in the Pennsylvania Medical College, has been appointed Professor of Anatomy and Physiology in the High School of this city. Dr. Hartshorne is well known and appreciated as a gentleman of extensive scientific and general information, and as a medical writer. One better suited for the position could not have been selected.

Dr. Simpson becoming cautious in the Administration of Chloroform.—Simpson, the discoverer of anæsthesia by chloroform, now recommends that chloroform be allowed to fall, drop by drop, on a single layer of handkerchief, laid over the face of the patient.

Ergot in Delirium Tremens.—Dr. O. H. Smith reported, at a recent meeting of the King's County Medical Society, that he once gave, by mistake, to a patient, half a teaspoonful of the strong tincture of ergot, every two hours, for delirium tremens, intending to have given tincture of opium. The ergot put the patient asleep, and, since that time, he has frequently used it as a remedy in delirium tremens. Dr. Smith says that he considers ergot almost as a specific in this disease.

Mr. Syme, the eminent surgeon of Edinburgh, has lately been honored by three European monarchs. The Emperor of the French has made him a Chevalier of the Legion of Honor; the King of Denmark has created him a Knight of the Order of Danebrog; and the Queen of Great Britain has appointed him her Surgeon-in-Ordinary for Scotland.

The Two-wheeled Ambulance.—Great complaint is made by the army surgeons in regard to the discomfort and inconvenience of the two-wheeled ambulance for carrying wounded soldiers. Their motion is said to produce the greatest suffering when used for carrying the wounded over uneven ground.

This practical experience with this form of vehicle is in direct opposition to the official report on ambulances by a committee of army surgeons, who decided that "a two-wheeled ambulance is the best for the conveyance of dangerously sick or dangerously wounded men."

Re-elected.—Dr. John G. Koehler, of Schuylkill Haven, has been re-elected to the post of Consulting Physician and Surgeon to the Schuylkill County Alms House. This is an honorable position, and the doctor's re-election is a compliment to his skill as a surgeon.

The Atmosphere of Sleeping Apartments.—The Paris *Siecle* says that, generally speaking, during winter, apartments are too much heated. The temperature in them ought not to exceed fifteen degrees centigrade, (fifty-nine degrees Fahrenheit,) and even in periods of great cold, scientific men declare that twelve or fourteen degrees had better not be exceeded. In the wards of hospitals, and in the chambers of the sick, care is taken not to have greater heat than fifteen degrees. Clerks in offices, and other persons of sedentary habits, when the rooms in which they sit are too much heated, are liable to cerebral congestion and pulmonary complaints. In bedrooms, and particularly those of children, the temperature ought to be maintained rather low; it is even prudent only rarely to make fires in them, especially during the night. In addition to keeping up only a moderate temperature, the windows of all rooms, whatever the weather, ought to be opened for a time every day, so as to renew the air.

If so, how many?—This question occurs so frequently in the numerous inquiries propounded by the Sanitary Commission that it has given rise to a joke, which is too good to keep. Said one of the surgeons to an "Inspector," after the questions had all been duly answered: "Doctor, will you take a drink?" "Don't care if I do." "*If so, how many?*"

Medical Officers for Canada.—Orders have been received at Chatham, directing Inspector-General W. M. Muir, C.B., principal medical officer of the garrison, to proceed forthwith to Canada to take the medical charge of the troops about to be dispatched to that country. A number of the medical officers attached to the staff at Fort Pitt Hospital have also been placed under orders to proceed to Canada, as well as a portion of the staff of the Purveyor's Department, together with forty men of the Army Hospital Corps. Among the officers named are Dr. J. H. R. Innes, C.B., Deputy-Inspector-General of Hospitals, and principal medical officer at the camp at Colchester; Staff Assistant-Surgeons Connell, W. A. Mackinnon, Philip Frank, M.D., T. Dolan, Julius Wiles, A. Macintyre, A. Bryson, W. J. Mullen, J. Anderson, E. Armstrong; and Assist. Surgeon E. L. Hiffernan, 1st Batt. 19th Foot. Deputy-Inspector-General T. D. Hume, M.D., will succeed Dr. Muir as principal medical officer at Chatham. —*Lancet*.

Death of Dr. Southwood Smith.—Dr. Southwood Smith, who died at Florence on the 10th of December, in his seventy-fifth year, was a native of Somersetshire, England. He was a man of great learning, benevolence, and piety, and an ornament of both the clerical and medical pro-

fessions, to the literature of which he furnished handsome contributions. He was diverted from the former to the latter by the condition of the poor which he visited. He corrected many abuses and made many improvements in the condition of the lower class. His best medical works are on cholera and quarantine; and his best religious, on The Divine Government.

Vital Statistics of Brussels for the Year 1860-61.—The population of Brussels amounts to 174,189, and during the year 4268 deaths were verified, of which number 1141 took place in the hospitals or prisons. The following are the chief diseases to which this mortality was due:—

Phthisis, 788; hydrocephalus, 36; encephalitis, 299; bronchitis, 361; pneumonia, 156; hypertrophy of the heart, 254; enteritis, 440; gastritis, 88; diarrhoea, 4; convulsions, 180; typhus, 135; apoplexy, 139; cancer, 112; croup, 90; variola, 72. Suicides and attempted suicides amounted to 30, occurring in 28 men and 2 women, hanging being the means resorted to in 13 instances, shooting in 4, drowning in 7, cutting instruments in 4, poison in 1, and jumping from an elevation in 1. —(*Presse Belge*, No. 46.)

St. Louis Hospitals.—The whole number of patients admitted into the General and Post Hospitals of St. Louis, from August 11, 1861, to January 1, 1862, was 8676. On the first of January there were 1407 patients in the hospital. The number of deaths during the same period was 532. In the Regimental Hospitals, barracks, and all other points near St. Louis, there were, during the same period, 1044 patients and 61 deaths; in the Post and Regimental Hospitals and quarters, at Rolla, 1468; and in the General Post and Regimental Hospitals (not including quarters) along the line of the Pacific Railroad, 1340. The sick in quarters, we may add, are generally very light cases—mostly colds.

Brooklyn City Hospital.—During the year 1861, 1256 persons received the benefits of the hospital with the following result: Cured, 672; relieved, 220; discharged at their own request, 50; disorderly or eloped, 120; died, 70; number remaining, 124. The number who paid wholly or in part, was 1038; wholly charity, 218; males, 1177, females, 79. Of the 70 deaths, 37 were coroner's cases, (accidents,) leaving the actual number of deaths by disease, 33. Whole number of rations issued during the year, 59,591. Of the charity patients, 173 were accidents sent by the city. The average time of each accident case was fifty-seven days, making for those sent by the city equal to 1400 weeks, which, at \$3 per week, amounts to \$4227; 520 of the patients were natives of the United States.

A Local Anæsthetic.—Dr. Fournier, of Paris, claims to have discovered a new way of producing local anæsthesia.

The following is from his recent communication on the subject, to the French Academy of Science. He terms the process *Chloracelization*:—

"Having," he says, "subjected a part of my body to the action of the emanations from a mixture of acetic acid and chloroform, I obtained local anaesthesia. The numerous experiments I have since made on myself or animals, and some of my patients, enable me to state the following proposition: If in an apartment, the temperature of which marks more than 17° Centigrade, (63° Fahrenheit,) the orifice of a thin glass phial, containing a quantity of pure crystallizable acetic acid equal to one-fourth of its capacity, and an equal quantity of chloroform, be exactly applied to a healthy and clean skin, not deprived of its epidermis; and if this phial be constantly maintained at the temperature of the hand, a complete insensibility of that part, and some of the deeper ones, will be obtained in five minutes, and at the cost of a very slight sensation of pain. The vapors of acetic acid and chloroform mixed together and applied with a glass retort to a part which it is intended to render insensible, the adjoining parts being protected by diachylon plaster from the action of these vapors, may be employed as anaesthetics in all operations of low surgery, and in many of the higher branches, in all cases where general anaesthesia may be considered dangerous, or declined by the patient."

Hospital Ship.—The schooner *Recruit*, attached to the Burnside expedition, is fitted up with 440 berths, arranged on two decks.

The following is Senator Wilson's bill for the reorganization of the Medical Department of the Army.

"An Act to provide for the Reorganization of the Medical Department of the Army."

"Be it enacted by the Senate and House of Representatives in Congress assembled, that the Medical Department of the Army shall be constituted as follows:—

"Section 1. There shall be one director-general, who shall have the rank, pay, and emoluments of a brigadier-general, and who shall, as chief of the medical corps, perform the duties now assigned to the surgeon-general, and such others as may be required by law and regulation. There shall be one sanitary inspector-general, who shall have the rank, pay, and emoluments of a colonel of cavalry, and who shall, under the director-general, have the general supervision of all that relates to the sanitary condition of the army, whether in quarters or in camps, and with the hygiene, police, discipline, and efficiency of field and general hospitals, under such regulations as may be hereafter established.

"There shall be eight sanitary inspectors, who shall have the rank, pay, and emoluments each of a lieutenant-colonel of cavalry, and who shall be charged with the duty of inspecting the sanitary condition of quarters and camps, of field and general hospital, and who shall report to the sanitary inspector-general, under such regulations as may be hereafter established, all circumstances relating to the sanitary condition and wants of troops and of hospitals, and to the skill, efficiency,

and good conduct of the officers and attendants connected with the medical department.

"There shall be not exceeding forty surgeons of the first class, who shall have the rank, pay, and emoluments each of a major of cavalry, and who shall ordinarily be assigned to staff, bureau, and hospital duties.

"There shall be not exceeding fifty surgeons of the second class, who shall have the rank, pay, and emoluments each of a captain of cavalry, and shall ordinarily be assigned to duty with regiments.

"And there shall be not exceeding one hundred assistant surgeons, who shall have the rank, pay, and emoluments each of a first lieutenant of cavalry, and who shall perform such duties as are now required of assistant surgeons.

"There shall be not exceeding one hundred medical cadets, who shall not be less than eighteen, nor more than twenty-three years of age at the time of entering, who shall be examined by a board of medical officers, in such branches of medical and sanitary science as the director-general may order. After three years of continuous medical service, and on their producing proper testimonials of character from the medical officers with whom they have served, they may be examined for promotion by a board of medical officers of the army. They shall have the rank, pay, and emoluments of the highest grade of non-commissioned officers of the army.

"There shall be as many hospital stewards as the exigencies of the service may require from time to time, to be designated by a sanitary inspector, on the recommendation of the senior surgeon of the post, division, regiment, or military department where their services may be required, and they shall have the rank, pay, and emoluments of first sergeants of cavalry.

"Section 2. Be it further enacted, that immediately after the passage of this act, it shall be the duty of the President to select from the medical corps of the army suitable persons to fill the offices of director-general, sanitary inspector-general, and sanitary inspectors. Provided, That no one shall be appointed to either of said positions who shall have attained the age of sixty years.

"Section 3. And be it further enacted, that promotion in the medical corps, up to the grade of surgeon of the first class inclusive, shall be by seniority; but that the grades of director-general, sanitary inspector-general, and sanitary inspectors, shall be filled by selections from the whole corps, and by such officers as shall have shown their peculiar fitness for such positions.

"Section 4. And be it further enacted, that the surgeons of the first and second classes provided for by the first section of this act shall be appointed from the medical corps of the army as at present organized, and in accordance with the requirements of section third of this act; and that the consequent vacancies in the grade of assistant-surgeon shall be filled by appointment from civil life. Provided, that no one shall be appointed an assistant-surgeon of the army, or

